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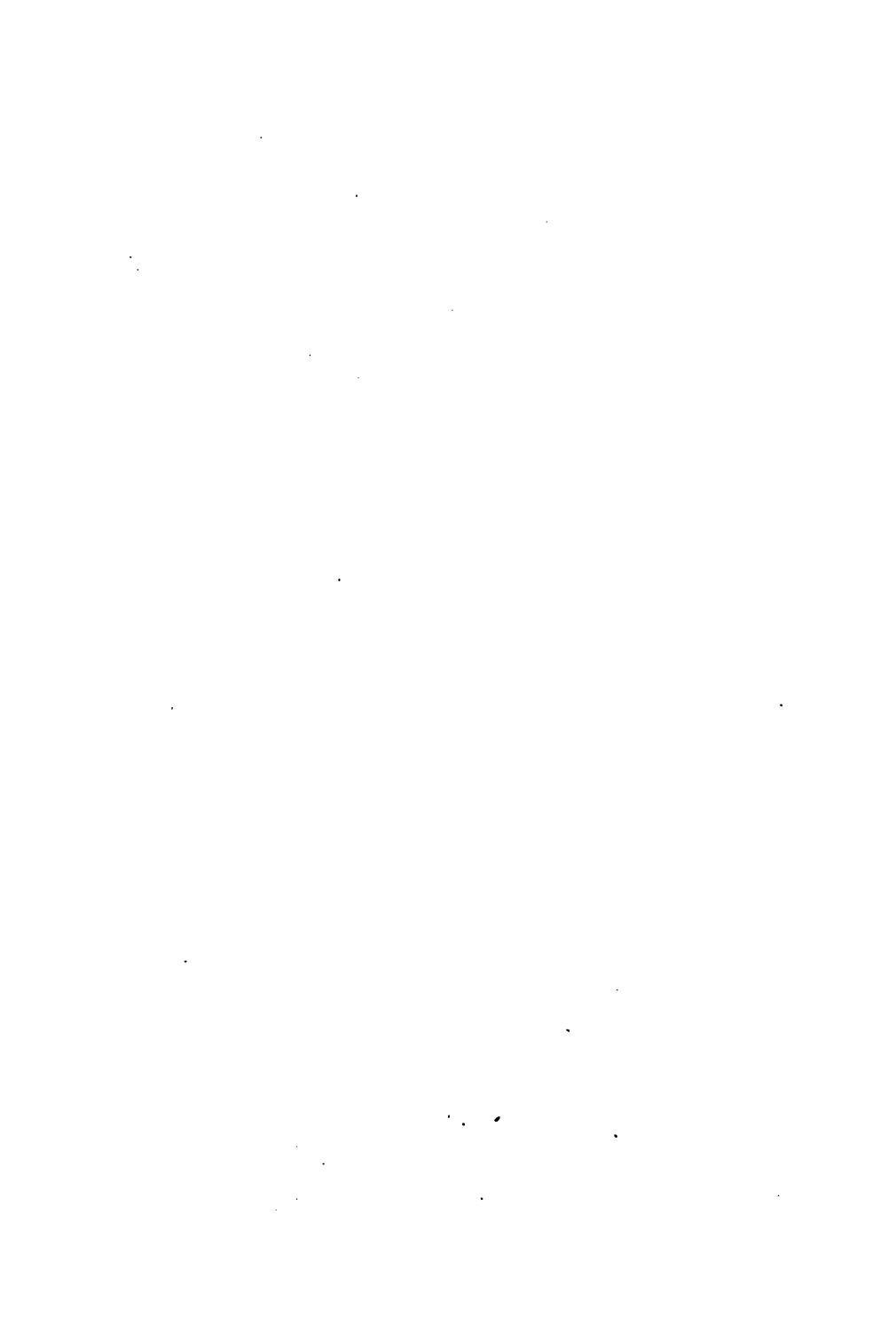
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**THE**  
**NAVAL OFFICER'S GUIDE.**

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LONDON:  
PRINTED BY RAYNER AND HODGES,  
Shoe Lane, Fleet Street.

THE  
NAVAL OFFICER'S GUIDE  
FOR  
PREPARING SHIPS FOR SEA.

O'er the glad waters of the dark blue sea,  
Our thoughts as boundless, and our souls as free,  
Far as the breeze can bear, the billows foam,  
Survey our empire, and behold our home !  
These are our realms, no limits to their sway—  
Our flag the sceptre all who meet obey.

THE CORSAIR, CANTO I.

BY CHARLES MARTELLI.



LONDON:

RICHARD BENTLEY, NEW BURLINGTON STREET.

1834.

189.



BY SPECIAL PERMISSION.

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TO

SIR PULTENEY MALCOLM,

G. C. B., G. C. M. G.

VICE ADMIRAL OF THE RED, AND COMMANDER IN  
CHIEF OF HIS MAJESTY'S SHIPS IN THE  
MEDITERRANEAN.

THIS BOOK

IS RESPECTFULLY DEDICATED,

BY HIS VERY OBEDIENT

AND HUMBLE SERVANT,

CHARLES MARTELLI.



TO  
SIR PULTENEY MALCOLM.

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SIR,

HAVING commenced this book during the time I had the honour of serving under your command; and as no officer is more capable of deciding on its merits, or demerits, than yourself, I have taken the liberty of dedicating it to you; feeling convinced from your zeal for His Majesty's Service, and impartiality as an officer, should it obtain your approbation, it will be recommended, and if not, will meet the fate it will justly deserve. I hope, Sir, you will consider a first attempt is attended with difficulties, but at the same time, assure you it was written with the sole idea of giving the youngsters in the service an opportunity of learning, without (what I feel

satisfied from my long residence amongst them, they so much dislike,) asking questions from the dread of being laughed at. In dedicating this book to you, Sir, I trust you will allow me thus publicly to return you my most grateful thanks for your kindness; and I shall always look back with pride to those years when I had the good fortune to serve under so distinguished an officer. With wishing you health and happiness, I have the honour to remain,

Sir,

Your very obedient and humble Servant,

CHARLES MARTELLI,

(MATE).

H. M. S. DONEGAL.

## PREFACE.

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THE sending forth a work on fitting ships, to the first naval nation in the world, I am well convinced, would be, to the most experienced seaman, a serious undertaking; and, of course, must be doubly so to one holding so humble a situation as a mate of twenty years' servitude. I am well aware there are many much more capable for the task than myself; but I look forward with the hope that those highly-gifted officers who may condescend to read it, will take into consideration the motive, and if they will not give me credit for the work, at least they will for the intention.

My sole object being to benefit the junior

branches of the service, should the publication of this induce one more competent to improve on it, my object will be fully accomplished.

From my long residence in a midshipman's berth, I had repeated opportunities of knowing that many young men, who were very anxious to gain a thorough knowledge of their profession, were prevented from asking questions, by the dread of being generally quizzed by those they inquired of, for their want of nautical information. To prevent this, I have first placed the way each piece of rigging is fitted; and then, as far as laid in my power, explained, by question and answer, the best plan for doing it, with its advantages and disadvantages. Having given two examples, in most cases, the reader will be able to judge, from examining in his own ship, which he would approve of.

An old mate writing a book on seamanship being such a rare circumstance, curiosity alone may be the means of giving instruction, as, no doubt, many would examine to prove him wrong; by their doing so I shall have in part

succeeded, as they will obtain, I hope, some information.

I have endeavoured to render the descriptions of fitting the rigging, &c., as plain as possible; and must therefore beg the indulgence of the reader for so much repetition.

It was my intention to have taken the ship to sea, and explained the ordinary evolutions of a cruizer; such as making, shortening, setting, taking in, and shifting sails and spars; but a severe illness, brought on by the effects of climate, during a long and uninterrupted servitude of twenty years, has prevented my doing so at present; but should this meet with a favourable reception, I will, in a second volume, complete what I at first intended.

To the junior branches of the service, I shall now particularly address myself; and hope they will derive a benefit from what I have written for their use, with a view to "lend them a hand," in some degree, to pass the dreaded examination for a lieutenant. Should I succeed in accomplishing this I shall feel fully rewarded, and

sincerely wish that they may never have the misfortune to serve twenty years *as a midshipman*.

Hoping I have not, in any way, given offence in the remarks made in different parts of the work, I shall, in conclusion, return my sincere thanks to those distinguished officers, who were kind enough to overhaul, and give their approval of it, previous to its going to press, and trust they will not be disappointed.

C. MARTELLI.

H. M. SHIP DONEGAL,  
January 15th.

P. S. Being advised to have the title "THE SEAMAN'S GUIDE," it was printed so; on reflection (as the Book was more particularly meant for the junior branches of the service), I had it changed to "THE NAVAL OFFICER'S GUIDE," but the sheets being worked off prevented the title being altered in the body of the work.

THE  
SEAMAN'S GUIDE  
FOR  
PREPARING SHIPS FOR SEA.

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ON an officer's first commissioning a ship, he should find out at the builder's office her draught of water at light and load line, and her best sailing trim. If at sea before, ascertain her good and bad qualities, and stow the ballast accordingly.

Previously to rigging a ship, tackles should be fitted for setting up, &c. On a ship's being first commissioned, half-worn rope is supplied for the purpose. The blocks are generally drawn fitted; if not, they should be strapped with good rope, as they can afterwards be used for other purposes, and the straps will be well stretched.

STRAPPING BLOCKS.

A piece of rope, sufficient for the strap, is

opened at both ends and spliced together. Large blocks, called furniture, are wormed, parcelled, and served; this is done before the ends are put in. The rope is put on the stretch, and slightly tarred; the worming, which is spun-yarn, wormed into the lay; in large ropes the worming should be backed.

#### PARCELLING

Is a strip of canvass, breadth according to the size of the rope; it is tarred and rolled up, one end is put on the rope where the service is to commence, a turn or two taken, overlaying each other, to secure the end; it is then passed round with the lay; edges covering each other to prevent the wet getting in.

#### SERVING

Service is made of two, three, or four yarns twisted together, and rolled up in a ball, the size must depend on the rope to be served. A mallet, with a groove on the side opposite the handle, is put on the rope, the end of the service is put in the lay, and two or three turns taken over, and hauled well taut to secure it. Two turns are taken round the rope and mallet, and a turn, or one-and-a-half round the handle; the mallet greased. One man attends the ball, and another works the mallet; round against the lay of the rope, the

service rendering from the ball, as the man attending it passes it round, with the man working the mallet, until the strap is nearly covered ; the ends are then put in once-and-a-half, or more, according to the size of the rope, and the ends scraped down and served over ; the end of the service is secured by taking two or three turns over the end, then the end hauled through and cut off.

#### WHAT IS BACKING THE WORMING?

It is done by passing smaller spun-yarn in the crevices left between the worming and edges of the rope ; it prevents any wet getting in. It being more difficult to completely fill up a large than a smaller rope.

Does the man attending the ball stand before or behind the man with the mallet, and is there any precaution necessary in passing it?

Before ; and half a turn should be taken out of the service, as constantly passing it the same way, takes too much twist in, renders the service hard, and prevent its laying even on the rope.

#### SEIZINGS.

A throat is made where a rope crosses.

A piece of rope ; suppose two-inch for a large shroud, splice an eye in one end, reeve the other through it, round both parts of the rope,

take seven turns. Pass the end down between the sixth and seventh through all, and through the eye. Take six upper or riding turns, pass the end through between the last turns, and expend the end on the standing part of the shroud; the end whipped and seized.

Would you take any precaution as to passing the seizing, or cut the ends off, after splicing the eye?

The two first turns should be left slack, as in bringing the end of the shroud up for passing the quarter-seizing, meeting the strain first; they are liable to snap. In splicing the eye, the ends are put in once, and not cut off, but placed under the first and second turns.

#### ROUND SEIZING.

The rope does not cross; both parts are brought close together; the seizing is passed the same as the throat, but when sufficient turns are taken, the end is passed round the centre of seizing between both parts of the rope; pass two round turns, take the end underneath one part, make a knot on it, or make a reef knot with the end on both parts. All seizings should be hove well taut in passing.

#### FLAT SEIZING

Is passed the same as a round, but has no riding turns.

**STRAPS (DOUBLE).**

The rope being cut the required length, unlay both ends and splice together, put the ends in once-and-a-half, or twice each way, according to the strap fitted. In purchase blocks, the ends, when put in, should be cut off (but not close) and whipped. The block is placed in the bight, and seized in with a round seizing, crossed each way, when secured, the seizing looks square. The splice always lays in the score in the end of the block, which should be made large enough to take it well in; when the thimbles are seized in, they should be parcelled in, the score, being tarred, as also the score of the block.

**SINGLE STRAPS.**

When fitted with hooks and thimbles, the strap is rove through the eye in the hook before being spliced.

**STRAPPING BLOCKS.**

When the strap is spliced and fitted, the block is placed in it. Reeve a rope's end through the sheave-hole in the block, and secure it to a bolt, belaying pin, or any thing most convenient that will answer the purpose, the lower part of the block being near the pin, &c., &c. Take a small jigger, hook the double block to the thimble

placed in the strap, the single block hook to a bolt in the side, or salvagee round a bitt-head, or any thing most convenient, and pull the strap well out. Large rope straps should be wedged well; the wedges, when the strap is set in its place, are taken out, and a round seizing passed. Large blocks are called furniture blocks, and the straps are always wormed, parcelled, and served.

If fitting large straps, how would you bring both parts of the strap together to pass the seizing?

I will take a small bolt, and lay it across the strap on the upper side. A stout strand is then knotted together with a reef knot, and taken over and across underneath the strap—not crossing each other—only across the strap from opposite sides. I will take a round turn round the bolt on each side of the strap; another small bolt is then passed through the bight in the strand on each side of the strap, and hove round the bolt across; as the turns accumulate on the bolt, it brings the part of the strap closer together; the strap is then taken off, and the seizing passed.

Straps of small blocks are scarcely ever wormed, parcelled, or served; sometimes, the latter with small foxes, or spun-yarn.

Is there a proportion for the length of a strap?

For a single block, three times the length of a block is sufficient to strap it, with a hook and thimble; all others must be measured.

WHAT IS A FOX?

It is made by two or three rope-yarns being twisted together by hand, and well rubbed. Spun-yarn, for large blocks, is laid up with a winch.

JEER BLOCKS (UPPER)

Are treble; fitted with a double strap, of sufficient length to lash abaft the mast-head, allowing the block to hang clear of the trusseltrees, after having led through the hole in the forepart of the top for the purpose. Getting up these blocks is described in rigging lower masts.

JEER BLOCKS ON THE YARD

Are three-fold; fitted with two single straps, one a third longer than the other, the longest in the after score. The block is seized in with a round seizing; the splice lays in the end of the block.

Are both seized singly, or if as one strap?

A round seizing is passed round both, and crossed as if a double strap, both ways.

Why should the straps be separate?

Because it allows the sheaves to lay fore and aft fair with those in the upper block.

#### TACKLES.

Luff, is made with a double and single block, single straps, with a hook and thimble in each. The standing part, or one end, is spliced into the strap of the single block; then the other end rove through the sheaves in each block, commencing with the double one. In reeving falls with old or worn rope, after the end is rove through the strap, it is better to clench it round its own part—falls cut to any length.

Why not splice it?

Because rope will serve for tackle falls, which will not bear to be unlaid for splicing.

#### GUN-TACKLES

Are made with two single blocks; fall spliced into the strap of one, or clenched. Single straps, with hooks and thimbles.

#### RUNNER AND TACKLE

Is made with a double and single block, both blocks having single straps, the latter with a hook and thimble.

The strap of double block is sufficiently long,

when the block is seized in, to allow a pendant to be spliced into it—this is called a runner.

Into the strap of the single block, in the opposite to the hook, work a becket; into this becket secure the end of a fall with a sheet bend, and reeve the other end through both blocks, commencing with the double one.

The runner and fall is cut to the establishment, or as requisite.

How is the becket made?

It is made with a piece of three-quarters, or inch, both ends spliced together, put in once-and-a-half each way; or a small strand made into a grummet, rove through the strap, before the block is put in.

What do you mean by once-and-a-half?

After the strand is put in, it is opened, and one half put in, the other cut off.

#### QUARTER TACKLE

Is made with two single blocks (large size), and supplied for the purpose; one is strapped with a hook and thimble; the other has a pendant spliced into the strap above the seizing; in the other end of the pendant a hook and thimble is spliced. A fall is then rove; one end, the standing part is spliced into the strap of the block with the pendant in. This tackle is used for

clearing boats, lighters, &c. The fall can be bent into a becket.

What is the advantage of having a becket in the strap?

In case of reeving a new fall, it prevents opening the strap of the block, which will have found its place.

#### FORE AND MAIN TACKLES

Are made with a double and single block, and single straps; before seizing the double one into the strap, a large thimble, parcelled, is put in; into this thimble, splice a long lashing of rope, equal nearly to the fall, and whip the end. The single block has a hook and thimble. The standing part of the fall is either bent into a becket in the single block, or clenched round the strap of the block above the hook. The falls in these tackles are generally long, as they are used for setting up rigging. There are two fore, and two main tackles.

#### WHIP (SINGLE)

Is a rope rove through a single block, one end being secured to a bolt when used on clewlines, &c., &c. The fall is rove through a leading block or sheave.

# DOUBLE WHIP

Is made with two single blocks, like a gun-tackle purchase, but the end not spliced into the strap, as it can be doubled or singled, as necessary.

How would you make a single whip on the yard into a double one?

I will put on the fall a single block, with a hook and thimble, then bend the end into the fall with a bowline knot, and round it up to the man on the yard, who will cast it off, and secure it to the boom iron, or round the yard with a timber-hitch.

# RACKING TURNS.

Take a piece of spun-yarn, middle it, and pass both ends through the bight, round one of the parts of the rope intended to be secured to the other, then pass both ends opposite ways to each other round the other part, and back again round the first, until sufficient turns are passed. Each turn crosses between both ropes.

# GRUMMET STRAPS.

A strand is taken out of a rope, the twist or form kept in; it is then made into a ring the size required, and passed in and out until the ring has the appearance of rope, the ends are then worked into the lay, something like splicing.

## SALVAGEES.

A number of rope or spun-yarns are passed round two pins, at the required distance, apart; then half-hitched with spun-yarn or foxes, close to each other, until all the yarns are secured together. They are used for putting on shrouds or ropes, to hook tackles or jiggers.

Why are salvage straps preferable to others?

Because, being soft and pliable, they get a better nip on the rope, and will not slip.

## WARPING STRAPS.

It is done with small rope or spun-yarn, passed round uprights or bolts for the purpose, and must depend on the size of the block, or purpose they are intended for. They are hitched over as salvagees, and are either served, pointed over, or covered, as required; they should be well parcelled.

## IN WARPING STRAPS ROUND THIMBLES OR BLOCKS,

If a strap and two lashing eyes are required, place the block on its edge, and put a bolt in the swallow of the block, and through a hole in a plank or stool immediately under it; then, at the required distance from the block, put two other bolts, sufficiently apart, to allow the straps being lashed round whatever it is intended for; then

commence warping round the block and bolts until sufficient turns are passed, then half-hitch with spun-yarn, and parcel well, and serve or point over as wished. With thimbles, they are put on the bolts and warped as before, round in the score.

Where would you commence working from?

I would secure one end round one of the bolts, or thimble, then pass round the block, then the other bolt back again round the block round the first bolt, and so on, until sufficient turns are passed, then I will finish as before, taking care that all parts bear an equal strain.

#### GETTING LOWER MASTS IN.

When it is not possible to get a sheer-hulk, how would you get in the lower masts and bowsprit?

The sheers, which must be two stout spars, are parbuckled in, which is done by making one end of a hawser fast in-board, and passing it under and over the spar, and is hauled upon deck; there should be two or three, one at each end, and one in the centre. I would get them in with their heads aft, as it is preferable, getting the mizzen in first, as the sheers can be drooped from the foremast to take in the bowsprit. The deck being shored well up, take a

broad plank, long enough to take two beams at the least (a strong back will do), for the sheers to stand on when raised; on those planks nail battens, to make a step or shoe for the heels of the sheers to stand in.

#### LOWER STRAPS

Should be warped with small rope, and hitched over close together: they should be sufficiently long, when lashed on the mast, to allow the lower purchase-block strap to be put through and toggled. They are lashed on the mast before launching.

#### UPPER PURCHASE BLOCKS. (F. B.)

Have double straps; the main one should be the length of the block longer than the other.

Why should one strap be longer than the other?

Because the falls lead clear of each other.

#### LOWER PURCHASE BLOCKS (F. B.)

Are double strapped sufficiently long to reeve through the straps on the mast and toggle.

On which part of the masts would you lash the straps?

It must depend on the housing. The lower one as far as possible below the centre, without

endangering the mast upsetting, should the upper purchase give way. The upper strap close to the hounds.

#### RIGGING THE SHEERS.

As the sheers come in, I will lay their heads on a spar placed for the purpose across the bulwarks, and pass a well-stretched lashing, as a round seizing, without being crossed, the end being expended on the sheer-heads; the lashing for sheer-heads should be a three-and-a-half-inch rope, eleven and nine turns. The purchase blocks are lashed round all, the lower block first, the upper one close to it (over).

The lower purchase is the main one.

#### SHEER-HEAD GUYS.

Take two stout hawsers, middle and close-hitch them on each sheer-head, close to the lashing. Take one end aft, the other forward, on each side. When the sheers are raised, to each end of the guys hook a luff tackle to a cat's paw, or bowline knot.

#### BELLY GUYS.

Half-way up each sheer, lash two single blocks, one on the fore, and one on the after side of each sheer. Through these (if not snatch) reeve the

pendant of a runner and tackle; take the ends of the pendants, one forward, and one aft, on each side, and secure them through two ports, round the bulwark. The lower block of each tackle hook to a stout lashing, passed round the bulwark, through the same port as the pendant, before and abaft: to the same lashing hook a leading block, and reeve the tackle-falls.

#### HEEL TACKLES.

Take four deck tackles, or large luffs, then pass a few turns of good rope round the heel of each sheer, and hook one of the tackle blocks to all parts. The other blocks; take two forward and two aft, and hook them to a lashing, through two ports, or some secure place, as convenient.

#### RAISING SHEERS.

When the heads are aft, I will take the main purchase, and lash the lower block to the fore bitts or knight head; reeve the fall through a leading block from the same place; then bring it to the capstan; take a turn with the heel tackles; attend the mast-head guys well, and heave the sheers up with the capstan; when high enough, hook a luff tackle to each sheer-head guy to a bowline knot, or both parts of the

hawser crossed, and a throat seizing passed : bouse all taut and belay, all the guys bearing equal strain, and pass the heel lashing. Unlash the main purchase and overhaul it down for the mizzen-mast, and toggle the block into the strap, which is on the foreside of the mast. Man the fall and walk the mast in.

Where should the strap on the mizzen-mast be lashed ?

A little below the hounds, as one purchase is sufficient.

Why is the strap lashed on the fore-side of the mizzen-mast ?

Because, as the mast rakes, it will be easier to get it into the step.

*Note.*—When sheers are got on board in a tide-way, care should be taken to have heel ropes on them ; also, the masts, when getting in.

What are the advantages of taking the mizzen-mast in first ?

As it is probable the sheers would not be long enough after the fore-mast is in to go over the mast-head, and would cause much trouble in lowering and raising each time.

#### SECURING SHEERS.

Take a stout lashing, timber-hitch it round the sheer (or clench), two or three feet above the deck, reeve it through the foremost port from

inside; pass it round the bulwark outside, in through the next port abaft the sheer, round the sheer, then through the after port outside, through the first port round the sheer, back again through the first port outside, through the after port round the sheer, and so on, until sufficient turns are taken to secure the sheer, then pass round all parts of the lashing, and secure the end. The sheers should, if possible, always stand between two ports, as they can be so much better secured.

#### GIRTLINES.

On one sheer-head secure a tail block, take a clove-hitch round the sheer with the tail, and seize the end back. On each mast-head lash two single blocks, and reeve falls.

N.B. Girtline blocks are single.

#### GETTING IN THE MAIN MAST.

Overhaul both purchases down, both falls led through leading blocks. Main purchase fall taken to the after capstan; upper purchase fall to the fore one; if none, to be well manned and put over a bitt-head or caval, and slack taken in, as the mast comes up. The purchase blocks are then toggled to their respective straps, the capstan manned, and the mast hove in. If any doubt of the upper purchase not being sufficiently strong, one block hooks to a strap

round the sheer-heads, the other to a salvagee strap round the mast-head. When the mast is quite clear of the gunwale, get slip ropes on the heel from the opposite side of the deck, and get it fair over the hole for lowering. Get the mast as much up and down as possible, with upper purchase, and lower into the step. Untoggle the purchase blocks, and unlash the straps, and transport the sheers forward, in their shoes, to take in the foremast. When the foremast is in, I will droop the sheers, and take in the bowsprit.

Do the sheers stand before or abaft the holes for the mast?

When the mizzen is taken in first, before;—when the foremast, abaft.

#### GETTING IN THE BOWSPRIT.

I will keep fast the heel tackles, and have hands ready to ease off the after guys; I will then take two luff tackles, have them hooked to salvagee straps round the mast-head, the single blocks to straps round the sheer-heads, unlash the purchase from the mast, ease away the after guys until the sheers droop sufficiently forward to bring the bowsprit clear of the bow. Steady taut the tackles to bear equal strain with the after guys; then take a stout hawser, take two

round turns close to the trusseltrees, hook good luffs to each end of the hawser, and set them taut up to the after part of the forechains or chess-tree. The strap for main purchase is lashed on bowsprit before launching, so as to balance it for pointing. The purchase is toggled as before. Take a pair of stout butt-slings, reeve them through the round hole in the cap, and toggle the upper purchase block to the bight. I will bring to the purchase falls as before; when the bowsprit is high enough, top on the upper purchase, and bring the bowsprit heel ready for pointing. then ease away the main purchase, steering it into its step with the upper purchase or topping left.

The masts and bowsprits being in, how will you get the sheers overboard?

I will lash them to the foremast singly, cast off the head lashing and purchase blocks, which I will lower with the girtlines, and hoist them out with the luffs used for topping lifts. If they are to be kept on board, they can be lowered the same way, the heels being transported aft with heel ropes, as they are lowered.

#### BOLSTERS

Can be put on before or after the masts are stepped; they are pieces of wood rounded on one side, and nailed to the trusseltrees, and

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are covered with several parts of tarred canvass, secured with small nails; great care must be taken that these nails do not come in contact with eyes of lower rigging when placed.

With the new tops, invented by Mr. Gibbon, carpenter of His Majesty's ship, *Britannia*, bolsters are not necessary, as the crosstrees go underneath, instead of being bolted over, which allows the trusseltrees to be rounded between. Great advantage is derived from this plan, as the tops are much lighter, and in case a crosstree is sprung, wounded, or required to be shifted, it can be done without touching the top, or any part of the rigging, except, perhaps, the futtock shrouds immediately near it. The advantages these tops possess, would be much sooner discerned by being seen, than by any description I can give. I saw them used in the above ship, and they were generally approved of; and being much shorter in the fore part than the old ones, did not injure the lining of the topsails, which was generally the case before, after being a short time at sea. The *Britannia's* lower masts stepped on spindles, fixed into a heel, which reached as high as the orlop deck, and resembled a piece of mast cut off, with a square spindle rising through the centre. There was a place left in the mast to fit this. The lower part was hoisted in first, and

stepped, the mast lowered on it, and wedged on all decks, and was found to answer extremely well, and would be of great use in case it was necessary to get ships' masts in with sheers, which house so large a part as these ships do.

The masts and bowsprit being in, proceed and rig the ship.

#### GAMMONING BOWSPRIT.

I will tar well the saddle on bowsprit and hole in the cutwater, take a well-stretched rope, in size according to the ship, sheer-hulk falls, if in store; take the end over the bowsprit, and clench it to its own part, reeve the end through the cutwater, and pass it over the bowsprit: take a stout strap, reeve it through one of the holes in the cutwater for the bobstays, and hook a snatch block, sufficiently large to take the gammoning. Lay along the deck a good luff or deck tackle; hook one block to a ring-bolt close to the capstan, and take three round turns, round it with the fall, and overhaul well forward; then snatch the gammoning into the snatch block in strap, and toggle it to tackle along the deck through the hawse-hole. Man the capstan, and heave steadily round; when well taut, rack with stout spun-yarn to its next part, and wedge well in th  
purchase, untoggle,

and pass another turn through the cutwater over the bowsprit, and inside first turn, then snatch, and heave up with purchase through hawse-hole as before, rack and wedge, and so on, until sufficient turns are passed, according to the size of the ship; a half-hitch is taken with the end round all; heave well taut, and several turns passed, and seize the end to the next part. These are the frapping turns. Gammonings run from seven-and-a-half inch to four-and-a-half. Large ships have two.

If two, which would you put on first?

The outer one; if not, it would slack the inner, the former being so much farther out, and consequently tending to bring the bowsprit down.

What appearance has the gammoning when secured?

The foremost turns on the bowsprit are the aftermost in the cutwater.

In setting up, what are the precautions to be observed?

The wedges should not be taken out, until the next turn is passed and hove taut. The gammoning should be greased as it is hove up in the hole and on the bowsprit, and the rackings passed on the driest part of the rope.

Would you allow the rackings to remain when gammoned?

No; it is better to cut them, in case one turn should be tauter than the other, all the strain would come on it, and would snap, but the rackings being off, it is probable the turns would render and bear an equal strain.

Have you seen the bowsprit gammoned differently?

Yes; hove up, with a lump under the bows; I prefer the former. I have also seen it hove up on a wharf. Should gammoning get slack, it can be refrapped, but never hove taut as when passed.

Would you fit the purchase for pulling up the gammoning differently?

A stout pendant, long enough to reach from the manger board to outside of hawse-hole, should be fitted to the foremost tackle block. It can have an eye in each end, one to take the hook of the tackle; the other large enough to take the bight of the gammoning and toggle. It can have the outer end unlaidd, and two stopper tails made, fitted with nettles, and passed as stoppers, on the gammoning; but a toggle is preferable, not being so liable to slip.

Fit the rigging for, and clothe the bowsprit.

#### BOBSTAY COLLARS

Are made with large rope, an eye spliced in

each end, put in once-and-a-half, wormed, backed, parcelled, and served; the heart seized into the centre with a round seizing, collar parcelled underneath the seizing. They are secured round the bowsprit, on the upper side, with a rose lashing, hove well through the eyes with heavers.

#### BOWSPRIT SHROUD COLLARS

Are fitted the same as above, but the heart is seized in the third, and lashed on the upper quarter, long leg underneath the bowsprit.

#### FORE STAY COLLARS,

The heart is made of wood, something in the shape of a horseshoe; a score is cut out at each end to take a seizing. There are two scores round the edge, one larger than the other. The collar is wormed, parcelled, and served, and lays in the score, the hearts being placed in the bight, the splice of the collar laying in the large score; the collar is secured to the heart with a flat seizing, laying in the scores cut at each end.

#### LASHING COLLARS.

I will take a rope, hitch it through round the hole in the cap, and bring it taut into the knight heads, and belay. Place the collar over this, and lash both bights of the strap underneath the bow-

sprit. This will allow height for the jib boom to run in and out.

What is the length of fore stay collars?

Twice the round of the bowsprit.

What is the length of a bowsprit shroud and bobstay collar?

Once-and-a-half the round of the bowsprit.

How far out would you commence clothing?

One-third from the end, and clothe out.

#### RIGGING BOWSPRIT.

I will take two long spars, rig them out over the head rails, cross the outer ends, and pass a throat seizing with a long strand or stout spun-yarn, secure the heels to an eyebolt on each side the bow port, on fore castle, or to the head rails; hang the outer ends to the bowsprit with a piece of rope, sufficient to bear the men who are to place the rigging. On these spars, when sufficiently far out, place and secure gratings, if none on board, short planks. The riggers should take every thing requisite, such as mallets, marling spikes, knives, seizings, parcelling, tar bucket, grease, heavers; all their tools should be fitted with a laniard, and each man and his partner should secure them in the most convenient place near his work, as borrowing from one delays the work, but causes

their loosing tools by passing them ; but a sailor need never to be told this.

#### PLACING RIGGING.

Tar well the bowsprit, then put on the first bobstay collar, forestay collar, first pair bowsprit shroud collar, second bobstay collar, second pair shroud collars, spring stay collar, and third bobstay collar. I will then heave them close up, and pass and heave well on with a rose lashing.

#### PASSING A ROSE LASHING.

The lashing is middled, and passed opposite ways, crossing between the eyes in the strap or collar ; when sufficient turns are taken, the ends are passed opposite ways round the crossing until expended, then the ends seized to their next parts. When finished, the ends appear as if coiled round the crossings.

#### FORE STAY COLLARS.

The following way of fitting has been approved of by a most distinguished flag officer, and one who stands highly celebrated for his professional knowledge:—\*

Make a salvagee strap of small ropes, equal to the strap of the fore stay collar ; in one bight,

\* Sir P. Malcolm.

secure, with a round seizing, a heart or thimble, according to the size of the ship; the other bight lay on the top of the bowsprit, and pass the end with the thimble in through it from underneath up, heave it taut through, beating the bight on bowsprit down as the other is pulled up; when well through, clap a seizing round the bight, without the thimble, and come up the jigger, and bouse the fore stay through the heart. If requisite, a heart can be turned into the stay, and set up with a laniard; the thimble should lay on the upper quarter on each side of the bowsprit; the straps to be where the other stay collars are usually lashed.

A strap can be fitted the same as the shroud collars, long leg underneath.

Objections have been made as to this strap being liable to slew, but it never can beyond a certain distance, and which will never prevent the boom going in and out. The French ships, invariably, have them fitted in this manner, and several, who had long cruises in the months of December, January, and March, never found any injury arise from them. The advantages are in setting up and securing, as a man can work much better and quicker by standing on the bowsprit to pass his seizing, when clapped on the end, than swinging on ~~the jigger~~ <sup>being hung to the fore stay.</sup>

A jib boom can be got out and in much easier, and head sails more expeditiously shifted.

#### MAN ROPES

Are spliced into bolts in the bowsprit cap; and in the other end an eye is spliced, ends put in once-and-a-half, and set up with a laniard to an eye bolt in knight heads, or staunchions for the purpose—splices served over.

#### CUTTING OUT LOWER RIGGING.

Two posts or uprights are secured on the deck, or floor of loft. Measure the distance from the opposite side of the mast-head, to the foremost dead eye, which is to be the distance between both posts. Some prefer the distance from the opposite side of the mast-head to the partners, added to half the breadth of the deck from the mast to the side. The shroud hawser is secured to one post, passed round the other, back round the first, until one gang of rigging is completed: mark the length of the eyes straight across at the opposite end to the one seized, cut at the latter, and the inside pair will be the first pair of shrouds; hitch a piece of spun-yarn round each shroud in the centre of the eye, making knots on it to the number of the shroud, commencing with the inside pair with one knot; the mark for the length of the eye gives the place

for seizing, the round of the rope giving their place on the mast-head.

What is the proportion for the eye ?

The round of the mast-head above the bolsters; and I have seen the breadth of the seizing added, supposing it would lay fairer on the side of the bolster than too close to the mast-head. This precaution is hardly necessary, as the rigging will stretch sufficiently in pulling up to bring the seizing down, however much it may have given out when stretched, before being warped round for cutting.

#### FITTING RIGGING.

The shroud is hove well out, with a tackle clapped on one end, the other secured as convenient, but stretching both ends answers best, as it will completely take the twist out. When stretching with both ends, tackles are put on each end, and pulled up at the same time, or one belayed and then pulled up alternately. It is wormed, backed, parcelled, and served, a third down from the seizing: the swifter, or foremost shroud all the way, except where the dead eye is turned in. I have seen a sword mat laced on the foremost shroud, and which was considered as answering much better, as it could be taken off and  
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convinced the less on rigging, unless where absolutely necessary, the better. In parcelling the eyes, I would commence from the centre, and pass several riding parts, as breaking the shroud to form the eye, the service must open, which allows the wet to get in; and if the service is begun in the centre, doubled, and then passed towards each end, it will prevent the wet getting to the rope.

#### FORMING THE EYE.

I will take a good strand, knot both ends together, lay it across both parts of the shroud; having brought them as close together as possible, pass both bights of the strand under the shroud clear of each other, then place a long bolt across close to the strand on the upper side. Take a round-turn round the bolt with each bight of the strand on each side of the shroud, put a smaller bolt through each eye in the strand, and heave it round the long bolt, as the turns accumulate on the bolt, both parts of the shroud come together; when quite close, pass the round seizing, the shroud being previously parcelled in the way of it. It is better not to hitch the seizing round all, but to pass the crossing turns, then take a clove-hitch on the shroud, and seize the end. I have always been informed, by very old seamen, the shroud will give out the length of the eye in

stretching, and from the rigging I have seen fitted, am quite satisfied as to the correctness of it. When an odd shroud on each side, an eye should be spliced in each, large enough to fit the mast-head; the ends of the strand put in twice each way, marled down, parcelled, and served over a third down, the same as the others.

#### MAST-HEAD PENDANT.

The long leg, when two, should be a third of the shroud. The eye is formed the same as the shroud, wormed, &c., &c. In each end a thimble is spliced, the ends put in once-and-a-half, marled down, and served over. The foremost leg is once-and-a-half the round of the rope shorter than the after one; the thimbles are well parcelled before splicing in. Small ships have only one pendant on each side, when this is the case, the rope is cut to the proper length; the starboard pendant is spliced into the larboard, and the larboard into the starboard, forming an eye to fit the mast-head, it is called a cut splice; a thimble is spliced into each end; they are wormed, parcelled, and served. They are the same length as the long leg, when a pair on each side.

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cutwater, covered with leather; when none to be had, I will pass two parts of parcelling, the first against, the second with the lay of the rope, and serve with good stout spun-yarn or four yarn plait; I will then reeve them through the cutwater, splice both ends together, put the strands in twice each way, marl down, and serve over. The hearts are then secured in their place (keeping the splice on the upper side), with a round seizing, the rope parcelled under it.

#### BOWSPRIT SHROUDS

Are single pieces of rope; when cut to the required length, a hook and a thimble, the latter parcelled, is spliced into one end, put in once-and-a-half, marled down, and served over; a heart is spliced into the other, they are wormed, parcelled, and served. A celebrated master in the navy, and a first-rate seaman, never served the bowsprit rigging all over; it is, certainly, in my opinion better not to do so, as the water can never lodge, which it may do, by getting in from broken service, which cannot be repaired at sea.\*

\* Mr. Napier, when in the Newcastle, I always understood, never served the bowsprit rigging. I have not had an opportunity, lately, of seeing him, to ask his opinion, and hope he will excuse my mentioning his name. But whatever his plan may be, it should be adopted, as no other could follow a better example.

## SINGLE LOWER SHROUDS.

When an odd shroud, on each side, as in small ships, one spliced into the other, forming a cut splice, to fit the mast-head, will answer. They should be served in the eye, and a third down, the same as when in pairs.

## TURNING IN DEAD EYES.

This has been a constant matter of dispute as to the best way; the end being up, as in general use, or down, like a cutter's stay. Prejudice had, for a long time excluded the latter, but now some of our best and most distinguished officers have had an opportunity of trying, and proved to the satisfaction of many, hitherto opposed to it, that the rope does not receive the slightest injury, and several heavy ships have been fitted so. I served in the Donegal, where it was done, and her commander, a very superior seaman, approved of it much.\*

## TURNING IN WITH END UP.

On shore, get the length from the mast-head parcel to the deck, from the mast head to the masts as the lower end, and place the rope so that the breadth of the end is

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stretching in setting up. Turn the dead eye in as near the end as possible, so that all parts of the shroud may be equally stretched, which will prevent its having a gouty end.

The principle caution is to keep the lay in the rope, as it prevents the wet getting in.

I have seen the shroud well wormed in the way of dead eye, but the worming should not be hove too taut in, as breaking the shroud round the dead eye, would probably snap it. The score being well tarred, the end of the shroud is taken underneath round the dead eye, inside standing or mast-head part. A bolt is put in a hole of the dead eye. Take a good strand, knot both ends together, it is then middled and crossed round the end of the shroud, both bights are taken round the bolt one on each side of the dead eye, and a smaller bolt put in each bight, which are hove round the large bolt in the dead eye. As the turns accumulate, it heaves the shroud taut round. The dead eye should be secured through one of the holes, with spun-yarn, to the shroud, before heaving, where the shroud is marked for the lower part. When the dead eye is turned in, in a loft, the shroud is hove round with a when on the mast-head, as  
above. W roud is hove well round,  
will pass at seizing with spun-yarn,

When secured, I will take out the bolts, get a small jigger, hook one end to a strap round the end of the shroud, and the other to the mast-head part; take a good strand, knot both ends together, take it round the end and standing, or mast-head part, put a bolt in both bights, and heave it round, pulling up the jigger at the same time; this will bring the end taut up, as heaving the strap brings both parts close together, then pass a round or quarter seizing, and a smaller one on the end. If the rigging is turned in on shore, keep the lay in the rope; and when sent off to be placed, keep the ends of the shroud inside, the shrouds being marked with a knot on a piece of spun-yarn, according to the number. The ends will lay, aft on one side, forward on the other.

#### CUTTER STAY FASHION.

The dead eye being placed to the mark, the end is passed round it as before, but instead of being secured with a throat seizing, the end is passed round the mast-head part, and seized to the part round the dead eye, with a round seizing, and another on the end, also round the part on the dead eye; the same precaution as in the other way, keep the lay in the rope, and end inside.

What are the advantages of cutter stay fashion?

In turning in, with the end up, the two first

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same size, and lash abaft the mast-heads. The legs are made for the collar in laying up. When sufficient length is laid up for the stay, from whence the collar commences, to the end for setting up, two strands on each are left sufficiently long to double back, and are then laid up as four strands, forming the lashing eyes and legs. The ends of the strands are then unlaid, the inside ones wormed into the lay of the rope; the other strands are divided, and twisted up as large spun-yarn, and worked in alongside the first strands; then some more yarns are twisted smaller, and used as backing; some inside yarns from each strand, should be wormed into the stay their whole length, the legs are then wormed well, so as to completely fill the rope, commencing from the centre of the eyes for lashing, which should be well opened with a large setting fid, and the worming carried into the stay as far down as the worming of legs. The outside yarns of the legs are then marled down over all, round the stay, tapering the bare ends. The legs are well parcelled and served, and the stay sufficiently far down to take the lower yards, and covered with tanned hide. The stays should be hove well out with purchases, and allowed to hang, pulling up occasionally. A three-decker's stays gave out twelve feet, and after a two month's cruise, were long enough to allow

nearly two feet to be taken off the fore stays. Stays fitted with lashing eyes are decidedly preferable, as they are easier shifted, the collars not being so long, the yards can be slung higher up, and consequently brace further forward.

#### STAYS WITH A MOUSE.

The stay is hove well out with purchases; a piece of parcelling, breadth according to the size of the stay, is hove round one part over the other, until high enough, it is then pointed over with small line or plait. In the end nearest the mouse, an eye is made in laying up, this is well opened, wormed, parcelled, and pointed over. The stay, from the mouse to eye, which forms the collar, is well wormed, parcelled, and served; also the stay a little below the mouse. The stay is then put through the eye, and hauled on until it meets the mouse.

What is the length of the collar when fitted with a mouse?

The round of the mast-head and half the foremast crosstree.

What is the proportion for a mouse?

Twice the round of the rope.

What are the disadvantages of a stay fitted with a mouse?

When the top is on it requires a deal of time

to reeve, and requires much hawling on with tackles to get it through the eye, and when over the mast-head for a long time, and wants repairing, the eye having formed a jamming nip on the stay, it is often obliged to be cut to get it down. I saw it done, and have seen nearly a whole day expended in trying to get one unrove.

#### SETTING UP BOWSPRIT RIGGING.

I will splice a laniard, of sufficient length, into the first bobstay collar, and reeve as many turns as it and the collar on the bowsprit will take, without riding. To a long strap round the bowsprit, inside the collar, hook a single leading block. I will then take a luff tackle, having the double block fitted with two salvagee tails. To a cat's paw, or Blackwall hitch in the laniard, as close to the upper collar as possible, hook the single block of the luff tackle. The double block clap on the bobstay, pass both tails round it, crossing each other, and expend the end of the tails between both parts of the bobstay; this will prevent their slipping. The fall from the double block, reeve through the leading block on the bowsprit, and lead it in clear of every thing, in on the forecastle; have rackings of spun-yarn middled, all ready on one part of the laniard, but not to prevent its rendering; grease the laniard

in both collars, and pull up ; when quite taut, rack well ; pull up and reeve until the laniard bears an equal strain, and when expended, secure the end to the next part, with two or three seizings, at equal distance from the end. When the cutwater is not a long one, a small bolster should be seized on each bobstay, the inner should be close to the cutwater, and the other their own breadth above as going to the outward bobstay. This should also be done where the bowsprit steaves much, as it keeps them clear of each other.

What are bolsters made of ?

Sometimes wood, and sometimes rope, well tarred, parcelled, and served.

How many turns is it necessary to reeve in the collars before setting up ?

Three or four are quite sufficient, then rack, reeve another, pull up, rack and take off the first racking, and so on until expended.

In setting up bobstays in small ships, a leading block on the bowsprit is not necessary. The double block fitted with a hook, and a single one with two tails will do. The double block on the laniard, single on the bobstay, one sheave of the double answering as a leading one. I will set the others up in the same way.

How far from the heart in the bobstay would you clap on the lower block of the luff tackle ?

A third down.

Are the laniards ever rove differently from this plan ?

Yes ; the laniard is doubled, middled, and both ends rove contrary ways, and pulled up with two luff tackles, clapped on the same way as above.

What sort of laniard would you use ?

Rope that has been in use, as the rigging being new, if the laniards were not completely stretched, they would not stretch the rigging ; these are called harbour laniards. If well-stretched rope, and sufficiently good can be got, I would reeve for the rigging of the bowsprit what I intended to remain. But when setting up for a full due, the lower and topmast rigging, it would be better to reeve rope as laniards which had been used for tackle falls while fitting.

#### SETTING UP BOWSPRIT SHROUDS.

I will splice a laniard into the heart, the other end fitted with a hook, I will hook to the bolt in the bow, for the purpose ; reeve sufficient turns of the laniard for setting up, hook the double block of the luff to a Blackwall hitch on the laniard ; the single block, with the tail, clap on the shroud, one part crossing the other, and when expended, stop the end, and pull up on the forecable ; rack and reeve, pull up, and secure as bobstays. Mouse the hooks.

How would you stop the end of the tails of single blocks?

The tails should have a nettle put in when making.

How is it done?

To the three inside yarns I will knot three long ones, and twist them into a nettle, then marl the other yarns down forming the tail, over it, as far as it will reach.

#### RIGGING LOWER MASTS.

In addition to the girtlines on the mast-head, I will have one on each trusseltree (after horns). I will take the starboard pendant, bend the upper girtlines half way down between the seizing of the eye and thimble in the end, then bend the eye towards the thimble, and stop the girtlines to the centre of the eye with a piece of small spun-yarn, the hauling part of the girtline down abaft all; if crosstrees are on (I have seen the masts rigged without, but prefer their being bolted), the hauling part between. Man the girtlines, and hoist the first pair of pendants up, when the eye is well up to the mast-head, cut the stop on the centre, and pull up the girtline. The pendant having been bent as above, will fall over the mast-head, and be easily placed. The other one is got over the same way. I will then, with a good and well-stretched lashing of worn rope, lash the starboard

long pendant to the mast, and to the thimble lash the runner block. To the larboard long pendant, I will lash the runner block, with a long lashing, allowing the block to hang near half-way down the mast from the trusseltrees, to the partners. This block is secured with a lashing passed round the mast, the same way as in the short pendant, about two or three feet above the block. The runners are rove through these blocks, and the double blocks, rounded close up. The end of the runner of the foremost is secured round the bowsprit, between both gammonings, if only one, inside it; the single block of the tackle is hooked to a strap near it, also round the bowsprit; the fall is led through a single block to an eye or ring bolt inside the forecastle bulwarks; set them well taut, and belay. I have seen the runners taken to the knight heads, but the former is preferable. All hooks of leading blocks should be moused to prevent accidents.

#### MAIN RUNNERS.

Pass three or four turns, with a piece of rope (and knot both ends together), through two ports in the forecastle bulwarks; to the centre of this strap, hook the single block of the main runner, one on each side, the runner secure to the same place; to the same strap, hook a leading block,

reeve the falls, and set the tackles well taut. I have seen the runners and tackles taken to the fore bitts on each side, but they were much in the way when reeving the stays. To the short pendants, on each side, lash the fore and main tackles.

How will you get the crosstrees up?

If they lay on the starboard side, I will take the girtline, bend and stop it to the starboard horn, on the upper side, well out, and stop it along to the larboard horn, and sway it up till it comes clear of the trusseltress, cut the stops, and it will fall into its place; it is then bolted, and the girtline taken off; the after one is got up in the same way, with the after girtline.

How is the lashing block fitted?

It is a single block, seized into a single strap, with a round seizing, between the blocks and a large thimble; a long lashing is spliced into the thimble.

#### GETTING LOWER RIGGING OVER.

The girtlines being overhauled down, bend the mast-head one with a timber-hitch, below the seizing four or five feet, and stop it to the centre of the eye; take the girtline from the after trusseltree, and bend it half-way down the shroud, and sway away the lower girtline, and lift the weight of the shroud. When high enough, the stop in the eye is cut, and it will fall over the mast-head, the men on the trusseltrees placing

it fair on the bolsters. The larboard pair is got up in the same way, and so on, until placed. I will reeve the laniard, if a knot on the end, a double wall, and crowned, is preferable, a Matthew Walker being liable to capsize; the laniard should be rove through the hole under the end. In preference to a knot, I would splice the laniard into a bolt in the chains, put there for the purpose, and I have seen five or six links of chain, with a thimble in the last, round which the laniard is spliced; this keeps the wet that may lodge in the chains, when washing out, from injuring the laniards.

The rigging is often placed, and then set up: but I prefer pulling up as placed. When the first pair, on each side, are over and placed, the laniard being rove through both dead eyes, I will take a lizard, or salvagee, and clap it on each shroud, well up; to this hook, the single block of a luff tackle—the double, to a Blackwall hitch in the laniard, then take the lower block of main or fore tackle, and hook it to both the falls of the luffs on each side, reeve the tackle falls through the leading blocks, and pull up, the men on the trusseltrees beating the shroud down as pulled up; when well up, place two pair more, and pull up, beating well down, until the mast is rigged.

What is the advantage of pulling up a pair at each side, instead of one singly?

Pulling up singly injures the seizing, as it is dragged forward first, and then pulled aft by the after leg; it is liable to slack the seizing, and may snap the inside turns.

Is the main or fore tackle sufficient purchase to pull up two luffs at the same time?

Quite, in setting up for placing; when doing so, for stretching, or a full due, I will hook a long tackle to a strap round the mast-head, and pull up both together, the falls of main or fore tackle and long tackle being led through leading blocks or sheaves, and not manned separately, but both falls being married, and pulled up by the same men.

In placing the rigging, to prevent accidents, I will have two or three man ropes, from different sides of the mast-head, for men to hold by.

How will you fit these pieces of rope?

With overhand knots, timber-hitched, round the mast-head will do.

Why should the knot of the laniard be under the end of the shroud?

Because, in setting up, the strain comes on the shroud first, and keeps the dead eye in its place; if put under the standing part, the strain coming on the end first, the dead eye would turn round, and as the shroud is intended to be set up, and not the end, the reason for reeving the laniard, as described, answers for itself.

The general way of rigging lower masts, being to put the first pair of shrouds on after the pendants, then starboard and larboard.

Would you prefer a contrary way in placing the rigging ?

With made masts, I have seen the after swifter go over first ; it was recommended, I believe, by Sir Pulteney Malcolm, and is now adopted in the *Caledonia*. In staying the mast these swifters should be set taut, the mast being previously wedged, and the stays set steadily up. I have heard some old sailors dispute this plan ; I saw it tried in the *Britannia*, it being necessary, considering the way her masts were stepped ; for, if stayed in the general way, with the wedges out, and first pulled forward to the partners with the stay, and then aft, the spindle would not bear it. All that is required is to keep the mast perpendicular in the step, and the runners being secured, as described, one up, and the other half-way down, the mast can be kept clear of a belly, and stayed with a steady pull, there is no danger of any injury. It will be necessary to pull the stay up oftener, and I feel convinced, that a gradual stretch will do more justice to the rope than getting the thing done at once, and securing. The *Donegal's* masts were stayed, for several years, with the wedges in, and were never found to have either a belly or a wrung mast-head. I

feel satisfied that prejudice and custom will be much opposed to this, and many officers who have not been employed for years, and think their own way best, will not only condemn the plan, but all who approve of it; but a trial will always confirm what I have stated.

#### MIZZEN-MAST

Has only one pendant on each side, fitted with a cut splice, a thimble spliced in each end. The rigging placed as lower main or fore; the mast is got into its place with a couple of long burtons, one to each pendant, and hooked to straps round the main bitts, or to ring bolts in the fore part of the quarter-deck bulwarks.

If the stays are not ready for going up, the burtons can be hooked to a lashing round the mast, the pendants being wanted to pull up for placing.

How is the rigging set up?

With a runner. When the mast is to be stayed, hook a burton to the pendant (the double block).

#### FITTING RUNNER AND BLOCK.

Take a single block and strap it with a single strap, having a thimble seized in the bight of the strap, close to the swallow of the block, with a round seizing. Through this block reeve a pendant, a few fathoms long; in one end splice

a thimble; the other end unlay about a fathom, and make it into a salvagee, with a nettle tail; through the thimble in the block, secure the end of the laniard (when rove) with a sheet bend or toggle. The end of the pendant, fitted like a salvagee, clap as a stopper on the shroud, and stop the end with the nettle. To the thimble in the pendant, hook the lower block of the burton, reeve the fall through a leading block, and set the rigging up; when taut, rack the laniard, and shift the runner.

In setting up for placing, how would you secure the laniard?

Rack well, and clove-hitch round the shroud over the dead eye.

#### GETTING STAYS OVER.

If the tops are not on, they are swayed up without any difficulty with the girtlines, and the eyes lashed. If fitted with a mouse, they are put over the mast-head, and foremost horns of the crosstrees, the mouse afterwards hove close to the eye; if the tops are over, the stay must be rove aloft. With lashing eyes, overhaul down the foremost ends of the girtlines, through lubber's hole between the crosstrees, and bend or timber-hitch them a few feet below the collar of the stay; stop them along to each leg and at the eye, sway

up, and when high enough, cut the stop in the eye, and pass the lashing; place the stays, and come up the girtlines. Take the ends of the stays forward, and reeve them in their places, or turn in the hearts the same as a dead eye.

#### REEVING AND SETTING UP FORE STAY.

Stays are now equalized. If the heart is to be turned in, it is done as a dead eye, with the end up. The laniard rove on the bight, the ends passed opposite ways. Reeve three or four turns in each heart; take two salvagee straps, clap them on the fore stay, a third up from the heart; to these straps hook the single blocks of two luff tackles, the double ones to Blackwall hitches on the laniard, and as close down as possible. To the falls of the luff tackles hook the lower blocks of fore tackles, and reeve their falls through leading blocks inside the fore-castle bulwarks. I would prefer hooking the leading blocks to straps round the bowsprit, close to the collar, and lead the falls in between the knight heads, or through the bow port, as they will lead fairer. The more they are up and down, the purchase is the better for pulling up the stay.

#### MAIN STAY.

I will pass one under, the other over, round

the cross piece in fore bitts for the purpose; clap the salvagee straps well up the stay, and two more near the end; to these hook two luffs, as in the fore stay. To the falls of the luffs hook the lower blocks of main tackles, reeve their falls through leading blocks, in as direct a line with the stay as possible; grease the bitts in the way of the stay.

#### MIZZEN STAY.

Overhaul the girtlines down through the holes for the legs of the stay before the crosstrees, close on each side the trusseltrees, bend them well down on the stay, and stop them to the eye in each leg (if fitted with lashing eyes), and get the stay in its place, and pass the lashing; if fitted with a mouse, it must be rove through the holes before being rove through the eye.

They set up with a laniard rove through the thimble turned into the end, on each side the main mast, and bolts for the purpose. When sufficient turns are passed, take the burtons forward from the pendant or lashing, hook their lower blocks to the laniard, and lead the fall through a leading block close to the bolt in the deck; if none, to the main bitts, or sheave in them.

What is the advantage of having the mizzen stay over the foremast crosstree?

It allows the crossjack yard to brace sharper up.

Will not the stay be liable to chafe by laying over the crosstree?

No; if the crosstree is rounded on the edge, and parcelled, or small bolsters put underneath, there is no danger of the stay being injured. At one time, there was an order against this, as also turning the rigging in cutter stay fashion, but both are now rescinded.

The men, attending all the laniards, should be provided with seizings, rackings, grease, levers, and marline spikes. I will now let go all the rigging (except the after swifters, if staying with the wedges in), get the masts into their places with the tackles, and then pull up the stays, racking and reeving, until sufficient turns are passed. I will then seize the end to its next part; unhook the fore and main tackles, and prepare for setting up the lower rigging.

When the main stay is rove round the bitts, and bowsed well up, a salvagee strap is passed round the end and standing part abaft, close to the cross piece, and hove round until both parts are brought close together; then a temporary seizing, sufficient to hold until next pulled up, is passed.

How do the men pass the seizing in fore stay if rove through the collar?

A grating is slung from the stay, which the men sit on to pass it. It should also be secured to the bowsprit, to prevent it swinging about.

How is the seizing passed on the stays, when rove as mainstay?

As a round one; some of the lower turns passed as racking ones.

I will now get the luffs up, as described, for lower rigging, and give it a good pull up, racking and securing the laniard as before; get the spars up, and swift in.

Are both stays pulled up together on each mast?

No; one at a time, being very careful in pulling up the second; it bears equal strain with the first.

If fore stays are rove through the collars on the bowsprit, how would you pass them?

The after one, from aft forward; the foremost, from foreward aft; if rove through collars on the sides, both ends in.

What is the advantage of having one main stay under the bitts, and the other over?

It gives space for a shot passing between, and often prevents both stays being cut at the same time. When the rigging is to be set up for a full due, the stays in the way of the bitts are well wormed, parcelled, served, and covered with hide,

and the ends of all the lower rigging whipped, as also the stays, and covered with canvass caps.

#### SWIFTING IN.

Some officers object to this, as being of no use, and a lazy practice, but as it is generally done, I will mention it. About half-way down the rigging, on each side, secure to the shrouds straight across, a long spar; seize it to each shroud with spun-yarn; then to each shroud, inside, secure a single block round the shroud and spar. Take a long fall, commence either forward or aft, and reeve through the blocks; the end of this fall reeve through the leading blocks into the side, the one leading block being aft, on the starboard side; the other, forward on the larboard side, or the contrary; both falls are then manned, and pulled up with a steady strain together, until the rigging is brought in. As it stretches pull up the swifters. A gradual pull with the tackles, although more troublesome, I think, with those who were kind enough to give me their opinion, is decidedly preferable.

#### GETTING HALF TOPS OVER.

Unlash the girtline blocks from each side of the mast-head, and lash them on the foremost and after sides. Send the end of the foremost girt-

line down abaft all, the other between the cross-trees.

Suppose the starboard half is to be got over?

Place it on the deck, with its upper side up, or on its edge, with the upper side aft. Take the foremost girtline, reeve it down through the foremost hole in lubber's hole for the purpose (or from aft forward, if on its edge), take it underneath the top, and if the hole for the futtock plate will take it, reeve it up (or from forward aft, if on its edge), and half-hitch it to the mast-head part; then take the mast-head part under the top (if on its edge, to the foremost side), and seize it well to the foremost corner (through a hole bored for the purpose) with a piece of small rope. Take the after girtline, reeve it the same way through the after hole, bored for the purpose, in the after part of lubber's hole, pass and half-hitch it the same way as the fore one, and secure it, with a good seizing of small rope, through another hole bored in the foremost corner. If the futtock holes will not take the girtlines, stop them with spun-yarn. The top should be so balanced in the girtlines as to hang fair when the stops are cut. Reeve the other ends of the girtlines through the leading blocks, man them, and walk the top up with the after girtline, taking in the slack of the fore one. Have men stationed on the trussel-

trees to bear off, cut the stops, and place. When the edge is clear of the crosstrees, cut the *after* stop, and sway on both girtlines, and when the foremost corner is well up, cut the stop; the top will then hang in the girtlines, and can be easily placed. Shift them for the larboard half; get it up the same way; bolt and secure the top. Shift the girtlines on each side the mast-head. A girtline from the mizzen-mast head is sometimes bent to the foremost edge of the main top, to assist in bearing off; it can be dispensed with. A rope's end bent to the fore-top, and hauled well aft will do.

#### WHOLE TOPS.

The girtlines are left on each side of the mast-head, one end is passed from underneath, and up through the hole for futtock plate, and hitched to the standing part; the girtline can be rove down through one of the holes in the edge of lubber's hole, as in half tops, the girtline stopped to the foremost edge to holes bored for the purpose. A girtline is taken from the mizzen-mast head and bent to the foremost part of main top. Man the girtlines, and sway away. When sufficiently high to allow the foremost edge of lubber's hole to clear the mast-head, cut the stops, and pull up, the top will fall over and hang in the girtlines, when it can then be lowered, placed, and bolted.

A rope's end bent to the fore-top, as in half tops.

I have seen girtlines bent from the foremost part of fore-top to the bowsprit end: and from foremast to foremost part of the main-top; and from main-mast to foremost part of mizzen-top to assist in getting over. But if the tops are properly slung, it is not necessary. The dead eyes for the topmast rigging can now be hauled up and put in their places in the top-rims.

#### GETTING UP. TOP BLOCKS

Are large single blocks, having iron straps, which are formed after being put round the block into a large hook. Overhaul down the girtlines through lubber's hole; bend one part through the sheave hole of the block, and stop it to the back part of the hook, hoist it up, and lash it to the mast-head, round the hook, well up. Through this block, reeve a hawser, send the foremost end down through the square hole in the foremost part of the trusseltrees, the after end through lubber's hole, through a leading block, and round the capstan; take two half-hitches through the fid hole, with the foremost end. Stop the hawser well round the hounds of the topmast, with a good lashing. Man the capstan, and heave the mast up and down. Unbend the hawser;

reeve it through the sheave hole in the topmast, send a hauling line down through trusseltrees for the end of the hawser, which haul up, and clench round the mast-head over the block, and overhaul the girtlines down before all, and get the cap up.

#### GETTING THE CAP INTO THE TOP.

Bend the foremost end of the girtlines, which were sent down before all, through the round hole in the cap, and stop them along to the after part of the square hole, keeping the bolts in the cap up. Man the girtlines, and sway away, bearing well off the fore part of the top. When high enough, lower, and place the round hole over the square hole in the trusseltrees, and sway the topmast well through, and lash it securely to the cap. In the fid hole, put a capstan-bar, with a hauling line on the end, and heave the topmast up; when the cap is clear of the lower-mast-head, haul on the line from the bar in the heel of the topmast, and it will slew the mast, and bring the square hole of the cap over the mast-head; then lower the hawser and place the cap, beating it into its place. Land the mast, unreeve the hawser, unlash the top blocks, and hook them to their proper bolts, on each side of the cap; reeve the hawser through one block, through the trusseltrees, through the sheave in the topmast, through trusseltrees again, and reeve the

end through the foremost bolt in the cap, on the opposite side of the block; before reeving it through parcel it well: take two half-hitches on its own or standing part, and secure the end with a round seizing of spun-yarn; bring the hawser to the capstan, and heave the topmast up, and try the fit; then lower away, get the topmast on deck, and try the other set; and lower for rigging. Secure the girtline blocks to eye bolts in the cap.

When would you take the stop off the hounds of the topmast?

Directly it is pointed through the trusseltrees; and when getting on deck, I will, after it is landed, single the hawser, the same as when getting up and down, and stop it to the hounds; then have slip ropes on the heel, haul it forward or aft, whether fore or main, and place it on the skids for stowing in the booms.

What is the difference in stowing the topmasts?

A fore is always stowed with the head forward; a main with the head aft.

What is the use of keeping the bolts up in getting the cap into the top?

As they will not catch the edge of the top-rim, and cause delay, and perhaps injury.

#### GETTING CROSSTREES OVER.

Overhaul a girtline through the round hole in the cap, and if they are to go up from the star-

board side, overhaul and send it down, and the after girtline outside the top; hitch that through the round hole in the cap, well out on the starboard foremost horns underneath, and secure the end with a good seizing of spun-yarn; the after one bend in the same way to the after starboard horn; then stop both girtlines well with spun-yarn, close to the trusseltrees, and also with two stops on the larboard horns, and sway away, bearing off from the top. When the upper or larboard horns are well clear of the cap, take two ropes' ends from the larboard side of the top and bend them to the larboard horns, and man them in the top; these are called bell ropes; and sway higher, cutting the stops and hauling on the bell ropes. When the trusseltrees are as high up as possible on the cap, haul on the bell ropes, and cut the stops close to the trusseltrees on the starboard side, and the crosstrees will fall across the cap; then place the after hole between the trusseltrees over the round hole in the cap, cast off the girtlines and bell ropes, and sway the topmast through; beat the crosstrees well down on the mast-head; when placed, sway the topmast a few feet higher for rigging; put the girtlines on the topmast trusseltrees to hoist up the topmast rigging. Pass a lashing through the fid-hole and round the lower mast, to steady it.

tackle through the upper one. The larboard block should be seized in once-and-a-half the round of the shroud lower than the other.

Why should not both be seized alike?

Because the starboard shroud going over first, they would not be square when the rigging was placed.

What is the use of seizing them in the length of the hanging block from the seizing?

To prevent any risk of the reef tackle and lift being jammed between the hanging block and the rigging.

#### STAYS

Are fitted the same as the lower ones, either with a mouse, or lashing eyes.

#### BACK STAYS (BREAST),

When in pairs, are fitted with eyes, the same as the shrouds, and served sufficiently far down to be square with the service of the topmast shrouds. They are also parcelled, and served in the way of lower yards, when braced up. A single clump block turned into the end (until stretched), they can be spliced in and pointed over. If there is only one backstay, it is secured to the masthead with a lashing passed round the masthead and an eye made in the end; the other end is secured to the gunnel block.

What are the use of bell ropes ;

They prevent the crosstrees falling back if a stop is cut too soon, and to assist in getting the crosstrees on the cap.

#### TOPMAST RIGGING

Is fitted in pairs, served, and the eye formed the same as in the lower ; dead eyes turned in the same way. The pendants, one on each side, with a thimble spliced into the end, wormed, parcelled, and served, as the mast-head pendants. They are called burton pendants. The foremost shroud, on each side, is generally served all the way down, but I prefer a lacing mat, as in lower rigging. Between the two foremost shrouds, on each side, a block with two sheaves is seized, one sheave over the other, they are called

#### SISTER BLOCKS.

There is a score on each side to take the shroud, and three scores for seizing, one on each end, and one between both sheaves. They are seized in, the length of the hanging block from the eye seizing, and are secured by a round seizing, being passed round the shrouds above the block, another below the block ; a small seizing is then put on each score round the block and shrouds. The topsail lifts lead through the lower sheave, reef

tackle through the upper one. The larboard block should be seized in once-and-a-half the round of the shroud lower than the other.

Why should not both be seized alike?

Because the starboard shroud going over first, they would not be square when the rigging was placed.

What is the use of seizing them in the length of the hanging block from the seizing?

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The pendant is rove through the clump block, and half-hitched through a bolt in the chains, and the end seized, or round one of the channel plates. In the other end of the pendant (or runner) a single block is spliced; and a few feet from the bolt, where the pendant is secured, a double block is strapped into a bolt, or hooked, and moused. Through these blocks a fall is rove, the standing part being spliced into the strap of the single block (and then led) from the double block through a fair leader in the side, in on deck.

What is meant by mousing a hook?

Passing a seizing round the back of the hook and point, to prevent its unhooking.

I have seen ships without breast backstays on any mast, and they carried sail equally well with those who had them; one was a seventy-six; her breast backstay was converted into a standing one, a little further aft; and many old sailors have told me they considered them quite unnecessary. They are generally pulled up in stays, when the ship is head to wind, having a quarter watch of topmen stationed by them. If they are set up too taut, which may be the case, especially when the rigging is slack, most probably they will snap, and endanger the mast, by the sudden jirk; if not set up enough, they can be of no use, and are only an additional weight on the mast, and a useless expenditure of rope; and their being set up

to bear equal strain with the rigging will not occur, with the greatest care, once in a year, and I consider them particularly injurious on top-gallant masts, which I shall try and explain under their own head.

Travelling backstays I shall not mention, as they are of no use, and injure the tops.

STANDING AFTER BACKSTAYS,

When in pairs, are fitted with an eye, the same as topmast rigging. When an odd one on each side, they are fitted with a horseshoe splice.

How would you form the splice?

The rope is middled, and a piece of rope, the same size as the backstay, and long enough, when spliced, to fit the mast-head, is spliced into it; the ends are put in once-and-a-half on each side, wormed, parcelled, and served over, and crowned in the corners, to prevent the wet getting in.

How is the crown put on?

It is done by doubling the service, by passing riding turns from the corner in the backstay and piece forming the horseshoe.

The backstays are set up with a laniard rove through dead eyes, the same as shrouds.

CATARPIN LEGS FOR LOWER RIGGING,

Are the length from the lower part of the trus-

seltrees to the lower part of the hounds. They are differently fitted.

WHEN SET UP STRAIGHT ACROSS,

An eye is spliced in each end; they are wormed, parcelled, and served : a laniard spliced into each eye.

THEY ARE ALSO FITTED THUS :

They are cut to a sufficient length to seize to the foremost shroud on the starboard side, go round from forward, seize to the third shroud on starboard side. They are wormed, parcelled, and served ; but, before being seized to the shroud, each leg should be secured with a good long seizing, passed round both parts, close to the mast : there are often cleats nailed on the mast to keep them up.

*Note.*—In cutting, allowance should be made for seizing round the mast.

The larboard leg is then secured the same way. A second leg is then fitted the same as the others, seized to the *second shroud* on starboard side, and fourth on starboard side ; the same on larboard side. I saw them fitted this way in two or three ships, and had nearly four years' trial in a brig, on the North American station, where they answered remarkably well, and were only

once shifted during the whole time, which was through a matter of opinion. They have nearly the same advantage which is derived from having the futtock shrouds to set up to the mast, when carrying a press of sail, there being no strain on the weather rigging, as the lee does not hang on it, by being pulled over to windward, which must be the case, where they lead straight across. When the *Britannia* was last fitted at Portsmouth, her catarpins went straight across; she was supplied with the new topmasts, which never, under any circumstances, unless materially improved, can answer. In moderate weather they complained very much, and opened in the joint on the weather side, often two inches. The rigging being new, and the catarpins fitted as above, and our leaving for Lisbon just as the summer commenced, of course, caused the rigging to stretch very much, and the topmast rigging (which when supplied, was much older and dryer than the lower,) to snap. After fitting some new rope as topmast rigging, it was proposed (I believe by Captain Drake) to fit crowfeet to support the topmast. They were made with small rope, had three legs, and were formed round thimbles on bolts, at the required distance, which, with being carefully warped; enabled each part to bear an equal strain. They were hitched over, and parcelled and pointed.

Two straps were fitted round each mast. The three legs were secured to the futtock staves and lower shrouds, and set up to the strap round the mast, with a thimble in it, and one in the angle of the crowfoot, with a stout laniard, and when secured, were in a direct line with the futtock shrouds. These legs very much improved the stand of the topmasts, but on our arrival at Plymouth they were returned, as not answering the intended purpose; but the crowfeet have remained with the other masts, and are preferable to futtock shrouds setting up the masts, as all danger of chafe is prevented, and they answer the same purpose.

#### FUTTOCK SHROUDS

Are the length of half the after lower cross-tree; an eye is spliced in one end; in the other, a hook and thimble; the splices served over.

#### FUTTOCK STAVES

Are iron bolts, well parcelled, and served over. Some sailors object to iron, and have rope, but iron is considered (by every one I have asked) to be preferable, as they cannot, when properly fitted, in the slightest way injure the shrouds, and are less liable to be so easily injured by the running rigging rubbing them. The proportion for seizing on the shroud, is the length from the

lower part of the trusseltree to the lower part of the hounds, marked on the after and foremost shroud. But taking the futtock shroud, when hooked to the plate, through the top, taut in, allowing for setting up, is the best mark for seizing. They are long enough to take in the shrouds only, the swifters being always left out.

How many swifters are there on each mast ?

The general number, in large ships, is one forward and two aft, on each side. I have seen three aft, and none forward ; but they must depend on the number of shrouds.

How will you seize it on ?

On the outside the rigging.

A good spar should be secured to the shrouds, high enough for the men to stand on and work. I will take a piece of small rope, according to the size of the shroud, splice an eye in one end, and reeve the other end round the shroud and stave, and through the eye, heave it taut, and pass more turns, crossing each other on the stave, and inside on the shroud. When sufficient turns are passed, clove-hitch round the shroud close to the stave, and seize the end. The futtock stave is seized in this manner to each shroud.

#### CATARPIN LEGS.

Before seizing these legs on, I will reeve a

swifter through the blocks secured to the spar the men stand on, and get it taut; this being done, it will not require much heaving to set up the catarpin legs. The laniard being passed round the shroud and stave, and through the eye, crossing on the stave; it is hove up by the man on the spar, by a Spanish windlass, or a heaver. When sufficient turns are passed, take two or three round all parts of the laniard; half-hitch, and seize the end.

#### FUTTOCK SHROUDS

Are hooked to their respective plates, with the points of the hooks in.

#### SETTING UP FUTTOCK SHROUDS.

When hooked to their plates, splice a laniard into the eye, pass it round the stave and shroud, reeve it through the eye again, and round the stave. Knot two ends of a small strand together, and pass it round the shroud, one part crossing the other, so as it will not slip. To this strap hook the double block of a small jigger, the single one to a Blackwall hitch in the laniard, as close down as possible; grease the laniard in the nip, and pull up in the catarpins. When sufficient turns are passed, take a few round all parts of the laniard, and seize the end. Opposite sides should be set up together. In large

ships, the fall should be rove through a leading block, and pulled up on deck. Another leading block should be secured to the futtock staves inside, to prevent the fall chafing.

#### HANGING BLOCKS

Sometimes are fitted with a long and short leg, and lash over the eyes of the topmast rigging. When under, a strap is made with a good piece of well-stretched rope, both ends spliced together, wormed, parcelled, and served, the strap long enough to pass over the mast-head, and allow the block to be seized in with a round seizing. Two straps, with a thimble seized in, fitted in the same way, are often used for the standing part of the topsail tye. There are generally two hanging blocks and two straps on each mast-head. The Donegal's were strapped with chain, which answered very well.

#### PLACING TOPMAST RIGGING.

Bolsters are not necessary with the cross-trees invented by Mr. Gibbon, as the horns are underneath, and the trusseltrees can be rounded. By going underneath, in case a cross-tree is sprung or injured, it can be replaced without lifting the rigging. Trusseltrees are generally rounded, as also bolsters; but I

think, if made more in the shape of a wedge, it would be less liable to open the service on the upper part, or put so much strain on the outside yarns. With Mr. Gibbon's crosstrees, the parcelling is put on the trusseltree, but if any danger is fancied, make a grummet of good-sized rope, and put it on the mast-head first. All mast-heads should be tarred under the rigging.

I will first put over the mast-head pendants, then the starboard hanging-block, then the larboard, next the straps, with thimble in for standing part of the tye, first pair of shrouds on the starboard side, then the larboard, and so on, until all over, then lash the breast backstay (if single); if a pair, put them over the same as a shroud, next the after backstays; lash the stays if fitted for it, if not, put them over the same as lower stays, with mouses. The collars of the stays go between the horns of the crosstrees, and lash over the after one. The standing stay goes over first, then the spring, and the end rove down through the collar of the former. The hanks for the topmast staysails are put on the spring stays.

What is the advantage of dipping the spring through the collar of the standing stay?

If not done, the staysail, on each tack, would

be chafed against the standing stay, and would be liable to get jammed between both in hauling down, it will keep the stays close down and together.

The fore and main topmasts are, as to the standing rigging, rigged alike.

#### MIZZEN TOPMAST

Has seldom or ever two hanging blocks; I have seen it in one instance. There is generally a sheave in the mast, which the tye leads through. (*See Tyes.*)

There is only one mizzen topmast stay, and is fitted the same as the others; no breast back-stay, and one pair of after ones on each side. The dead eyes are turned in the same as in the lower rigging. I have seen two clump single blocks go over the mast-head, strapped as hanging blocks, for the main topsail braces to reeve through, but prefer them as lashing blocks, for should the straps require repairing or shifting, it would cause the rigging on the mast-head to be lifted, which should always be avoided as much as possible.

#### LEADING AND REEVING TOPMAST STAYS.

##### FORE TOPMAST.

The standing stay is rove through the outer

sheave in the bees of bowsprit, has a large thimble turned into the end, and a laniard rove through it, and a bolt in the forecastle bulwarks outside, for the purpose. I have seen a double block turned into the stay, but prefer the thimbles.

#### THE SPRING STAY,

After being rove through the collar, and through the hanks, is pointed through the inner sheave, on the opposite side, and has a thimble turned in, the same as the standing stay, a laniard spliced in, and rove in the same manner.

#### MAIN TOPMAST STAY.

A large clump block is strapped round the foremast head, over the eyes of the rigging, and immediately over the square hole in the after part of the trusseltrees. Through this block the main topmast stay is rove down, through the trusseltrees, has a thimble turned into the end, a laniard spliced and rove through it, and a span shackle in the deck, abaft the foremast, for the purpose, well parcelled.

#### SPRING STAY

Is rove through a roller fitted in a hoop round the foremast, under the top; a thimble is turned into the end, a laniard spliced into it, and rove

through another strapped round the foremast head, close over the eyes of the rigging, and through the square hole in the trusseltrees, abaft the foremast.

#### MIZZEN TOPMAST STAY

Is rove through a thimble, strapped round the main mast head, over the eyes of the rigging, and when set up, is secured to its own part, with round seizings; if preferred, it can be set up with a thimble turned into the end, and a laniard, but is not necessary. When the stays are well stretched, the thimbles can be spliced in, but it is not a good plan, for if necessary to unreeve, the splice must be drawn, which will injure the rope. I have seen them fitted this way, and pointed over for neatness, but prefer their being turned in, the end pointed or capped.

#### GETTING TOPMAST CAPS ON.

The girtline blocks should be lashed well up to the topmast head. Overhaul down before all (the foremost ends) and secure them to the foremost bolts in the cap, stop them to the centre ones, and square hole in the after part, and sway the cap up; when well up, cut the after stops, sway higher, and the cap can be easily placed by the man aloft, and girtlines cast off.

## MAN ROPES.

A piece of rope has an eye spliced in one end, and several over-hand knots made at equal distance from each other, they should reach a third down the topmast rigging, and should be seized round the mast-head, close to the cap. They are absolutely necessary in large ships, and should be on all; one on each side is sufficient. I saw them in some very neat ships; and when it is recollected what little room the men have for their feet, when they get near the crosstrees, and the longmast head, to get on the cap, it is certainly worth while to sacrifice something in the way of appearance to ensure the safety of a man's life.

Some large ships have ladders, with two steps, set up to the eyes of the topmast rigging, from across the top.

## SWAYING UP TOPMASTS.

With the purchase invented by Mr. Pearse, Master of H. M. ship, Malabar, much time is saved, and less men required, than in following the old plan; but as his is not generally adopted, I will describe what is still in use. To describe Mr. Pearse's plan, and give it the justice it deserves, is not in my power, but I feel satisfied, however prejudice (and things doing very well

before) may be opposed to it, witnessing one trial will, most probably, satisfy the greatest defender of the old school. It made a difference of several men in getting the Britannia's masts up, and in much less time, without the aid of a capstan.

#### TOP TACKLE PENDANTS.

Being cut to the required length, a thimble, well parcelled, is spliced into one end, and the other pointed, with a becket in it. There are two to the fore, and two to the main topmasts. In the heel of each topmast there is a dumb sheave; take one pendant, reeve it through the top block hooked to the cap, through the trusseltrees through the dumb sheave; through an eye bolt in the foremost part of the cap on the opposite to the block, take two half-hitches, and secure the end to its own part with a spun-yarn seizing. Hook the top tackle-fall block to the thimble in the pendant, and the lower one to the bolt in the deck for the purpose, and reeve the fall, bring it to the capstan, and heave well taught, and unreeve the hawser.

The other pendant reeve through the other top block, through the trusseltrees, through the live sheave in the topmast, and clench, as to the other, to the eye bolt in the fore corner of the cap; hook the fall blocks, reeve and bring the fall to the capstan, taking the other off, and

manning it well. When no fore capstan, both falls for fore topmast must be well manned.

#### TOP TACKLE FALLS AND BLOCKS.

The upper block is treble, iron strapped, which is made into a hook; the lower is a double one, strapped with iron, having a swivel; a single one is hooked near the double, as a leading block; the fall is rove; the standing part hitched or clenched over the upper block.

How would you hook the upper block?

I will clap a single tail block well up the pendant, reeve a fall through it, hitch it through one of the sheaves of the treble blocks, hoist it up, and hook.

#### MIZZEN TOPMAST.

Is fidded, with a pendant rove through a sheave in the heel, through the trusseltrees, then a block hooked to the cap, and half-hitched, or clenched, to a bolt on the opposite side, in the foremost corner of the cap; a good luff tackle is hooked to the thimble (the double block); the single to a bolt in the deck, and the fall through a leading block.

#### PREPARING TO FID THE MASTS.

Capshores should be stepped and secured, luff tackles clapped on all the stays and backstays,

lower blocks not hooked on the lariards, but to bolts in the deck, and eye bolts or straps in the chains. Capstans and falls manned; topmast rigging quite clear, and hove over the sides of the tops, and the topmasts hove up and fiddled.

Why should tackles be put on the stays, &c.?

A turn is taken with the falls, and eased off as the topmasts go up, to steady them.\*

#### SETTING UP TOPMAST STAYS.

Clap a salvagee strap on fore topmast stay, well out, inside the bees, reeve sufficient parts of the laniard through the thimble in the stay, and eye bolt in the bow; cat's paw or Black-wall hitch the laniard to the hook of the single block of a luff tackle, and the double to the

\* The manner described of clapping the luffs on the backstays, is the general way. But as the weight of the rigging is all abaft the mast, and the stay, although being steadied forward by the luff, will not be sufficient to keep it from binding against the after-part of the cap, and consequently prevent its going up as quick as it otherwise would, I have often thought a burton hooked to each pendant, the lower block to a strap round the foremast futtock plate, and the fall sent through lubber's hole on deck, would answer much better than the luff on the backstays. I have never seen it tried, but am of opinion, from its being so much further forward than the breast backstay, it would be of more use, with the stay, in keeping the mast upright.

salvagee strap, and get the topmast well forward, greasing the laniard as pulling up; rack well, and expend the laniard, and secure it with a seizing to its own part, and take off the racking. The spring stay is set up in the same way. The stays should be wormed in the way of bees, and sufficiently far up to allow for stretching.

#### MAIN TOPMAST STAY.

Clap a salvagee strap on the stay well up, and hook the double block of a luff tackle to it; the single, after reeving sufficient turns for pulling up, hook to a cat's paw or Blackwall hitch in the laniard; reeve the fall through a leading block, and get the mast well forward; expend the laniard, and secure as fore topmast stay. The spring stay is set up with a luff tackle on the stay, and laniard, in the top, and secured as topmast stay.

#### MIZZEN TOPMAST STAY

Is set up in the same manner, with a jigger in the main top. If no laniard, a strap is put on the end, and the single block hooked to it, and secured to its own part, with a round seizing; the three first turns of seizing should be passed as racking turns.

#### SETTING UP TOPMAST RIGGING.

It is done with a runner.

## FITTING RUNNER.

Take a single block, strap it with a good piece of well-stretched rope, and allow the strap long enough to seize a thimble in, with a round seizing, at the swallow end of the block. Take a piece of good rope, splice a thimble in one end, and fit the other like a salvagee. The pendant must be cut long enough for the rigging. Reeve the laniard the same way as lower rigging, and secure it with a sheet bend, or toggle, to the thimble in the block. Reeve the pendant through the block, and secure the salvagee end to the shroud, well up. Take a long burton, hook the double block to the mast-head pendant, and the single one to the thimble in pendant, and send the fall of the burton through lubber's hole on deck, reeve it through a leading block, and set up one shroud on each side together, beginning with the foremost one, having a man stationed with a maul to beat the top down as pulling up. The laniards are rove, dead eyes turned in, and secured as lower rigging. When all are set up, pull up the backstays.

## SETTING UP AFTER BACKSTAYS.

Take the pendant and block used for setting up topmast rigging, secure the salvagee end well up on the backstay, and the laniard to the thimble

in the block; hook the double block of a long burton to the burton pendant, and the single one to the runner or pendant; send the fall down through lubber's hole, reeve it through a leading block or sheave in bitts, and set the backstays up, and secure the laniard as in rigging. I would prefer the burton fall, rove through a leading block in the chains, as the purchase will be more up and down. I have seen both ways.

#### GETTING UP JEER BLOCKS.

Secure two single whip blocks to the after bolts in lower cap. Send the two foremost ends down on deck through the hole made in the fore part of the top, between the trusseltrees, for the jeer strap; bend them through the shell of the block, with two half-hitches, and seize the end, and stop them along each leg of the strap; the larboard whip to larboard leg, and the starboard whip to the starboard leg; then stop both legs together, with a seizing of spun-yarn, in the bights. The hauling part of whips through lubber's hole on deck, through a leading block. Man the whips, and hoist the blocks into their places. When clear of the top cut the stop in the bights, and haul on the whips, and they will bring the strap into its place on each side of the mast-head. Then cut the upper stops on

whips; take a turn, parcel the eyes well, and pass the lashing in the bight, securing each end to their next part; let go, and take of the whips.

There is a bolster under the strap in the fore part of the top, which should be parcelled.

#### LIFT BLOCKS

Are double; an iron plate is bolted across the upper side of the main or fore cap, it is in the form of a crescent, the hollow side towards the topmast; in each end of the crescent or horn, an eye is turned, and a thimble put in it. I have seen two eye bolts, instead of the eyes being turned, driven through the crescent and cap, and secured underneath with a nut; a thimble is also put in the eye bolt.

What is the advantage of having the strap across the cap in the form of a crescent?

It brings the lift blocks well forward, and consequently, when rove, will not so much injure the foremost shrouds of the topmast rigging. Parcel well the thimble, and strap into it a double block with a double strap, which can be made by splicing both ends together, the splice laying in the lower part of the block, and then a round seizing passed round the strap, between the block and thimble. A grummet can be made, the block

seized in the same way. The iron across the cap is now in general use, and has a decided advantage over the rope strap, which was constantly requiring to be served afresh in the way of the edges of the cap. I saw the above plan adopted in the *Britannia*, and after three years' trial she was again fitted with them at Portsmouth. The *Asia* also had them the time she was in the Mediterranean, and on the flag being removed from her into the *Britannia*, the latter was fitted with them. A rope strap can never bring the lift blocks so far forward, being lashed between the mast-head and heel of the topmast. I have seen the strap secured to the bolts in the cap, but never to answer so well as with the iron strap across.

#### LIFT BLOCKS WITH ROPE STRAPS.

A strap is made long enough to go across the cap, allowing a double block to be seized in each bight, with a round seizing, and hang clear of the upper edge of the cap. A lashing is then passed in the bight, between the mast-head and heel of the topmast, round both sides of the strap, above the blocks. When sufficient turns are passed half-hitch on each end close to the blocks, and expend round all parts of the lashing as frapping. I never saw any plan tried that brought the lift blocks so far forward as the iron strap.

The bolts being driven through, the ends of the iron is by far the best, as the plate across the cap supports the sides, and the eye bolt prevents any chance of the eyes, when turned up in making, giving way. I inquired, when making for the Britannia, and was told the eye bolts being driven through, and secured with a nut, was the most secure.

#### CROSS JACK LIFT BLOCKS.

Are single, one on each side, and can be fitted as above.

#### GETTING IN LOWER YARDS.

The jeer blocks can be lashed on before launching, or taken off the wharf.

On each gangway, or side of the forecastle, place casks, or whatever will answer the purpose, to place the yards on for rigging. If a heavy yard, reeve a hawser through the starboard sheave in the jeer block, then through the centre one in the block on the yard, up again through the centre sheave in the jeer block, (if got in on the starboard side) and clench it round the yard, close to the block, or take a round turn, and timber-hitch. Stop the standing part of the hawser, at equal distances, along the larboard yard arm, with three or four stops of small rope, commencing

from the inner quarter. To the short pendants (if the tackles are unlashed) put a strap through the thimble, and hook a good deck tackle, or lash the fore or main tackles. Overhaul two luff tackles, one along each gangway, hook the single blocks to bolts in the chesstrees, also two luffs, one on each side, from the bowsprit to straps round by the collars, and bring the double blocks in ready for hooking to the fore yard. The hauling part of the hawser is either brought to the capstan or manned, rove through leading blocks on opposite side of the deck, and the yards hove up or walked in. When the upper yard arm is clear of the side, cast off the upper lashing, and sway higher; as the second lashing comes clear, cast it off, and put round the yard arm, between the second and third lashing, two salvage straps; to the bight of one, hook the tackle from the short pendant; to the other, the luff from chesstree or bowsprit, if fore or main yard, and heave or sway higher. When the yard is well up, cast off the remaining lashing on the upper yard arm, and take in the slack of the tackle and luff. On the starboard yard arm, at the same distance from the end as the larboard one, put round two salvage straps; to one, hook the tackle from the starboard pendant, starboard luff from chestree or bowsprit; if fore or main, take in slack of lower

tackles. When the yard is nearly up, pull up on the starboard tackles, ease the larboard until square, keeping the yard well clear of the lower rigging, by the luff tackles from the gangway or bowsprit; lower of all, and place the yard for rigging. Secure them in their places with good lashings, and cast off the tackles, and unreeve the hawser. If got in from the starboard side, the larboard yard arm will be the upper; if on the larboard side, the starboard.

When no jeer blocks on the yard, how will you reeve the hawser?

I will hook a snatch, or leading block, to a pair of butt slings, round the slings, or to a lashing passed for the purpose. I have seen lower yards hove in with a single hawser, clenched round the slings, but with more difficulty, and loss of time.

#### GETTING IN TOPSAIL YARDS.

Reeve a hawser through one of the hanging blocks, if got in on the starboard side, the starboard one, and the contrary. Take a round turn, and timber-hitch one end (the foremost one) round the slings of the yard, and stop it along the larboard yard arm, the hauling part of the hawser lead through lubber's hole on deck, and through a leading block. Man it well, or bring it to the capstan, heave or walk the yard up.

When the upper yard arm is clear of the side, timber-hitch a rope's end round it, and pass it forward as a guy, and cast off the stops; if the yard is to be rigged on the skids or gangway, one yard arm should be taken forward; if laid across, casks should be placed for them before the lower yards. I have seen them rigged on both places, and also got in before the lower yards. A great deal must depend on the time they are ready for coming off.

How could you tell the starboard from the larboard yard arm?

Lower yards generally come off with boom irons on; if not, all yards can be told by cleats in the slings, which should always be kept on the fore side and upper quarter.

#### FITTING RIGGING FOR LOWER YARDS.

Jackstays. Take a piece of rope of the proper size, cut off the length of the yard; splice an eye in each end to fit the yard arm, sufficiently taut to require being driven on. Cut in the centre, and splice a thimble in each end, put the strands for splicing in once-and-a-half, marl down and serve over. If two jackstays on each yard arm (which should always be the case when the sail is reefed to one) the large jackstay, before splicing the thimbles in, is rove through the eye

bolts on the yard for the purpose; this is the reefing jackstay. The bending one is fitted the same way, and after being put over the yard arm, is seized to the neck of the bolts on the after side. This plan answered well, as it was found much easier to reef than when fitted with one jackstay, there being always difficulty and delay in getting the points between the jackstay and the yard when the sail was bent to it. When only one jackstay, it is rove, of course, through the eye bolts.

#### FOOT ROPES

Are once-and-a-half the length of the yard. An eye, to fit the yard arm, is spliced in one end, and a small one, to take a seizing, in the other. Spliced and served as in jackstays.

#### STIRRUPS

Are short pieces of rope spliced round the foot rope, eyes spliced in the opposite ends, to go over the jackstay bolts, served over the splices. They are sometimes unlaidd at one end, and made into plait, secured to the yard with flat-headed nails, having bits of hide or leather placed under their heads, before being driven into the yard. Going over the jackstay bolt is preferable.

#### QUARTER BLOCKS (FURNITURE).

Topsail sheet blocks are large single blocks

with double straps, the block seized in with a round seizing, and secured round the yard, inside the cleat, one on each side, with a rose lashing passed through both bights on the top of the yard. Before the lashing is passed, the block should be hove up with heavers, and the eyes of the strap brought as close together as possible. This is done with a good strand passed through both, and hove up with a Spanish windlass.

#### CLUE GARNET BLOCKS (FURNITURE).

Are single, seized into a single strap, with an eye spliced in each end, and are secured round the yard with a rose lashing, same as topsail sheet, just outside the cleats. Some ships have all the rigging inside the cleats, which is much snugger.

#### LIFT BLOCKS

Are single, seized into a single strap, with a round seizing, the strap long enough to go over the yard arm, after the block is seized in. If both ends are spliced together, the splice lays in the score of the block or upper side, but a grummet will answer equally well.

#### YARD TACKLE PENDANT AND BLOCK.

A piece of rope of the proper size, and one-third the length from the rigging cleats, has an

eye spliced in one end, to fit the yard arm ; in the other a fiddle block is spliced, both splices put in once-and-a-half, and served over. These are not always fitted, are much in the way, and being constantly exposed to wet and dry, and seldom used, very often, when wanted, are found defective ; and as it takes so little time to get them up, if at hand, it may be as well to keep them, until required, in a dry place. When made to be used as required, a hook and thimble should be spliced in one end ; and when got up, can be hooked to a salvagee strap, or taken over the yard, and hooked to its own part.\*

#### BRACE BLOCK.

This strap should be made sufficiently taut to require being driven on the yard arm.

Two thimbles, one within the other, called dog and bitch. Take a piece of rope, of proper size, cut it long enough to go round one thimble and the yard when spliced together ; worm, parcel, and serve it, and pass a round seizing round this strap, close to the thimble. The block is a large, flat, single one, with two scores. Take a piece of rope long enough for this strap, splice

\* I have seen a lizard thimble spliced into the pendant, the round of the yard from the hook and thimble, to which the pendant is hooked, after being passed round the yard.

both ends together, worm, parcel, and serve it; reeve it through the thimble already strapped, and pass both parts round the score of the other thimble; then place both bights in the scores in brace block, keeping the splice in the after end of the block, and pass a round seizing between the block and thimble; cross it both ways as in double strap.

#### PREVENTER BRACE BLOCKS

Are fitted as above, and often with a single strap; they are much smaller, and a differently shaped block.

#### TRUSS STRAPS.

A large thimble, score, well parcelled, is seized into a double strap, which is made by splicing both ends together, and served over, the thimble secured in the strap with a round seizing, the splice laying in the score. The strap should be long enough to go round the yard in the quarter, both eyes lashing together on the fore side; there are two on each yard. One thimble is seized inside the truss pendant; the other outside; and one is the round of the pendant higher up than the other.

#### TRUSS PENDANTS

Are wormed, parcelled, and served; an eye is

spliced in one end, large enough to take the pendant when rove through it; in the other an artificial eye is made, large enough to take the single block for truss fall. The pendant should be rove through the small eye before the artificial one is made, boused well taut round the yard, the eye being kept underneath, and one pendant higher than the other; and reeve the upper pendant through the upper thimble, and lower pendant through the lower thimble. Being rove in this manner, they will lead perfectly clear of each other.

#### TRUSS PENDANT, WITH A THIMBLE IN THE END.

The pendant is fitted as before, with the exception of a large thimble being spliced into one end; the pendant is passed round the yard; the starboard thimble being kept up, the larboard one down; and a throat seizing passed. When they are fitted in this manner, there are no truss straps, the pendants being rove through the thimbles in their opposite end: the pendant, of course, being rove before the artificial eye is made. This is decidedly a bad plan, as the pendants are constantly slewing on the yards, and never lead clear.

#### TRUSS PENDANTS CLENCHED.

Instead of the eyes being in the end, which

goes round the yard, or thimbles, the pendants, after being put round the yard, are clenched. This was, I believe, adopted to prevent unreeving the trusses, but if fitted with artificial eyes, it is not necessary, although very convenient, if the pendant should require taking up.

#### TRUSS FALL.

A single block is placed in the eye, and secured in it with a round seizing, close to the block. A fall is spliced into the upper part of the pendant, round the block, or into a small becket put there for the purpose, and rove through one of the sheaves put in the after part of the trusseltrees, and the single block in the pendant, and the hauling part led from the other sheave in the trusseltrees through a fair leading sheeve or block on deck. There are other ways of leading and reeving this fall ; the one mentioned here, is the most general, and I believe most approved of.

How is the artificial eye made ?

The rope is unlaid at one end, and all the yarns separated, and equally divided into two parts ; a large spar, of the size required for the eye (or whatever will answer) is placed between both parts of the yarns, the inside ones are then crossed, and half-knotted, over the spar, and then the next, until all are nearly expended ; the outside ones are then crossed over

all; the eye well marled, scraped down towards the ends, and served over all, or covered with canvass.

What is the advantage of this eye?

In striking lower yards, if the blocks were spliced in, the splice would have to be drawn each time to get the end through the thimbles in the truss straps, unless the pendants were clenched. The artificial eye, when the block is taken out, and brought together, is only the size of the pendant, and will go through the thimble. The blocks can certainly be turned in, but they never look snug, and require more time.

#### SLINGS.

Chain are so generally in use, and so far preferable to rope, and being also allowed to all ships in the service, that I will not mention the fitting of rope ones.

#### PLACING THE RIGGING IN SLINGS.

Jeer blocks and slings in the centre. On the starboard side, close to the topsail sheet block, truss pendant, then truss strap. On the larboard side of topsail sheet block, truss strap, then truss pendant; if the rigging is all within the cleats, a clue garnet block is lashed on each side; if not, they are lashed one on each side,

close outside. I have seen them both ways; inside is preferable.

#### PLACING THE RIGGING.

Tar well the yard arm close to the cleats and slings in the way of rigging. First, jackstay; if two, the bending one, and set it up amidships with a laniard; then the reefing one; it goes through the eye bolts, and is set up with a laniard, same as bending one. Then the foot ropes; after going over the yard arm, and rove through the stirrups, they are lashed together with a laniard, rove through both thimbles, and are secured with a good seizing to the strap of jeer block. Yard tackle pendant next goes over, brace block, preventer brace block, and lift block. If the stirrups go over the jackstay bolts, they should be put over, before the jackstay is rove.

#### REEVING JEERS.

The standing part is clenched round the strap of upper block, rove through the one on the yard, and up through another sheave in upper block, and so on, until all rove full. The hauling part is rove through a leading sheave in fore or main bitts, or leading blocks. When heaving up, they are either brought to the capstan, or manned.

## REEVING LOWER LIFTS.

Clench one end round the yard, outside all; then take the other end up, and reeve it through the foremost sheave in the double block in the fore or main cap, then through the block on the yard, and through the other sheave in the double block, and through lubber's hole on deck. Well up this part, splice in a lizard.

## FITTING LIZARD.

Take a short piece of small rope, place a thimble in the centre, unlay the ends, cross the strands, then half-strand the whole, and lay six of the half-strands into three. Take the outside yarns of the remaining six, and make them into nettles. Splice the three strands into the lift, putting them in twice, taper and marl the yarns down over the splice, and point over all with the nettles. I have seen six strands worked into a rope, the strands crossing each other in the lay; it is not necessary, and does not look so snug or neat, as when put on with three; when putting a lizard on a large rope, and which is not intended to be pointed over, the six strands should be worked in, then half-stranded and put in again. When the lifts are fitted in this way, the end of the lift is rove through a leading block on deck; and when required to be

boused up, the double block of jigger is hooked to the thumble, the single one to a bolt in the deck, and the fall rove through a leading block. When sufficiently up, the slack of the lift is hauled through, belayed, and the jigger taken off. Lifts have often a double block spliced into the end, well up from the deck; a single block strapped into a bolt in the deck, or a double one to a bolt in the chains; a fall is then rove, the standing part to the single block, the hauling-part through a leading block or sheave in the bitts; if in the chains, through a fair leader in the bulwark from the double block. This is decidedly the best way, as all the time is saved in hooking jiggers, and often in belaying, the lift comes up, which is the cause of squaring yards again, besides blaming those who do not deserve it. One objection to this plan is appearance, as blocks are considered (in show ships) in the way; another is not overhauling so quick; which I was never able to discover.

#### MAIN BRACES.

A single block is seized into a long double strap, with a round seizing, crossed both ways, the strap is then put through an iron outrigger, on the quarters, fitted for the purpose, and both bights lashed to an eye-bolt in the quarter piece.

The standing part of the brace being parcelled, is rove through another bolt in the quarter piece, and spliced into it, or clenched, the other end rove through the block on the yard arm from out, in through the block in quarter piece, and through a sheave in the bulwarks abaft for the purpose. Both ends of the brace are often rove through the bulwarks; when this is done, a double block is fitted on the quarter, and two sheaves in the chock in the bulwarks. The advantage in this plan is, when bracing the main yard round, both parts can be hauled on, and when nearly up, a turn is taken with one end, and the other hauled on. By hauling on both parts, less rope requires to be drawn through, consequently the yard swings quicker, and as it requires more strength when nearly up, belaying one end gives a purchase sufficient.

#### MAIN PREVENTER BRACES.

After being rove through the block on the yard, one end is clenched, spliced, or two half-hitches taken, and the end seized to the two after fore shrouds, over the futtock staves. Just below this, a single block is seized on, or strapped round the shroud, and the block kept in its place with a round seizing passed between the shroud and block; or a block spliced into a

short piece of rope; taken round the after shroud, and secured as the end of the brace round the one before it; through this block, the hauling part of the brace is rove, and then through a leading block on deck. If the braces are to be worked on both ends, a double block must be secured to the shrouds, and the leading block on deck must be double.

When the ship is worked with these braces, they should be crossed, the starboard brace going to the larboard rigging, the larboard to the starboard, and passed over fore braces.

What is the advantage of crossing them?

They can be worked on one gangway, and the main tack and main-top bowline on the other. I have seen braces rove through straps round the foremast; and if fitting a ship, should have them so, as it will take the jerk of the fore rigging, when the ship pitches, off the main yard.

How would you secure the end of the brace, or tail block, round the two after shrouds?

I will take a round turn round the after one, two half-hitches round the other, and seize the end.

#### FORE BRACES

Are clove-hitched, and the end seized aft, on the collar of the main stay, below the splice or mouse; the other end taken forward, rove

from in, out, through the block on the yard, through a single block, strapped into a bolt with a thimble in it, in the cheek of the main mast, close up to the trusseltrees; then rove from forward aft, through a sheave in the main bitts.

The brace is often middled, and clove-hitched in the bight on the main stay, and both ends taken forward, and rove as before.

#### CROSS JACK YARD

Is got in with a hawser, rove through a block hooked to a strap under the mizzen trusseltrees; the strap going round the mast-head, and the block hooked to both bights. The hawser is timber-hitched round the centre of the yard, and sloped along the starboard or larboard yard arm, according to whatever side it is to come in at. It is placed across the quarter deck bulwarks, and rigged. In swaying this yard up, a couple of luffs (if a heavy yard) are hooked to straps round the mizzen mast-head. The single blocks to a strap round each quarter. It has a foot rope, with one or two stirrups on each yard arm. In the centre, on each side of the slings (which are iron) is one single block, secured to the yard with a lashing on the upper side, passed through both bights of the strap, for mizzen topsail sheets to lead through. A double block is often used instead of two single ones; when this is the case, the sheets lead

across, and are very useful in assisting to square the yard. Straps fitted the same as fore or main topsail sheet blocks, and secured round the yard with a rose lashing.

#### BRACE BLOCKS

Are single, and strapped the same as lower brace blocks. A double block is secured to the after shrouds in the main rigging, the same as main preventer brace blocks. One end of the brace is clenched, spliced, or half-hitched, and the end seized just below the block, then rove through the block on the yard, through the inside sheave in double block, and through a fair leading sheave in a rack in the side, or a leading block. The brace block should be put on the yard, sufficiently far in, to be inside the topmast backstays when braced up. I have seen blocks strapped into bolts on the main mast, for the brace and bowline, which answered extremely well, and would fit them so, for the same reason as preventer braces. These braces should be well below the yard, as it always tops up on a wind, which slacks the weather leach, and which is partly the reason a mizzen topsail never stands well.

#### LIFTS

Go over the yard arms, an eye being spliced in the end to fit them. The other end is rove through

the block at the cap, and is set up with two thimbles and a laniard in the top, one thimble being turned into the end, the other strapped to the eye of one of the lower shrouds. They are sometimes set up in mizzen chains in the same way.

#### TOPSAIL YARDS (FORE AND MAIN).

**Jackstays.** Are rove through the eye bolts, after going over the yard arm, and set up midships, with a laniard and thimbles, the same as the lower yard. Foot ropes and stirrups the same way fitted, but lashed round the yard abaft, on their opposite quarters. Stirrups go over the eye bolts, or nailed, as in lower yards.

#### PASSING THE LASHING FOR FOOT ROPES.

Splice the laniard into the eye in the end, take it over the yard, and round on the fore side, underneath through the eye, again back round the yard on the fore side, through the eye, and back the same way, until sufficient turns are taken to secure it. Then take a half-hitch from the lower edge of the eye, round all parts of the lashing, pass it round before, reeve through the eye on the upper side, take two half-hitches round all, and secure the end.

#### TYE BLOCKS

Are now generally iron-strapped, and bolt into

straps round the yard for the purpose. If fitted with rope, they must have two straps, the same as lower jeer blocks, and secured round the yard with a rose lashing on the upper foremost quarter. They are single, two on each yard.

#### QUARTER BLOCKS

Are sometimes iron-strapped, and secured in the same way as tye blocks, and much time is saved by having them fitted so. In shifting yards, the topgallant sheets and topsail cluelines need not be unrove, which must be the case when rope straps. When rope, they are seized into a double strap, and lash on the top of the yard with a rose lashing.

#### PARREL.

Two pieces of rope, one longer than the other; the long one, sufficiently so to go round the mast and yard on each side, the short leg to go round the mast, and lash to the long leg on each side. They have an eye spliced in each end, are wormed, parcelled, and served, both marled together, and covered with leather. A round seizing is passed round both, close to the eye of the short leg, on each side. The long leg is taken under the yard, brought round on the fore side, and secured to the short leg with a lashing of small rope, passed through both eyes. The other

eyes are lashed together when the yard is across.

**BRACE BLOCK**

Is strapped the same as main or fore, but the strap round the yard with the thimble is double.

**LIFT BLOCKS,**

When double, which should be always the case in large ships, as it takes a deal of strain off the sister blocks and seizings. A single block is seized into a single strap, which may be a grummet, or both ends spliced together; they go over the yard arm after the brace block.

**FLEMISH HORSE**

Is a short piece of rope, spliced round a thimble, which is on the neck of the boom iron, it has an eye spliced in the other end, and when the yard is rigged, is secured the same as a foot rope, just inside the brace block, two or three feet, according to the length of the yard. They should be long enough to allow a man to stand on to pass an earing, &c.

**TOPMAST STUDDING SAIL HALLIARD BLOCK**

Is a single block, seized into a strap put over a thimble on the neck of the boom iron, outside the thimble for the Flemish horse.

**STRAPS.**

Half way out each yard arm a strap is fitted, long enough to allow a thimble to be secured in it, with a seizing passed between the yard and thimble; this is called a rolling tackle strap.

Straps are sometimes put on the yard, with thimbles seized in the same way inside the lift, to hook a burton to, but a salvagee strap is in more general use; and with the topsails, which have straight leaches, setting a studding sail with one reef in, the burton should be taken much farther out than the eyes of the rigging, there being so much yard beyond the head of the sail, and the halliard block being in its usual place. But the great advantage derived from these sails quite counterbalance any objections that can possibly be started as to the length of the yard arms.

**MIZZEN TOPSAIL YARDS**

Are rigged nearly the same as the others, but the brace blocks are on the fore side, and the Flemish horses generally spliced into bolts in the ends of the yards, round thimbles in them. There is seldom more than one tye block on this yard.

**PLACING THE RIGGING ON TOPSAIL YARDS.**

Tar the yard arms; first the jackstay, foot ropes, brace, and lift block; if no block, the lift,

Flemish horses, topmast studding sail halliard block.

Where should the quarter blocks be lashed?

When the yard is down, so as to hang clear of the cap.

On which side of the yard do the stirrups hang?

On the after side of all yards.

#### TOPSAIL BRACES.

Fore. As they are differently rove, I shall give each, and leave it as a matter of opinion which is the best. Middle and clove-hitch the brace in the bight inside the fore braces, on main stay. Take the ends forward, reeve them out through the brace blocks on the yard, then bring the end aft, reeve it through a single block, seized into a single strap, and well secured on the main stay, on each side, inside the standing parts; then through a single block in the cheek of the main mast, and through a sheave in the main bitts. Sometimes a double block is strapped into the bolt into the cheek of the main mast. Fore brace through inside sheave, topsail brace through outside one. These braces often lead across, which gives more room on the quarter deck for working ship.

#### HAULING PART TO MAIN TOPMAST HEAD.

A single block is seized into a single strap,

the latter being fitted with an eye in each end, it is seized in the third. The long leg taken abaft the mast-head, and the short before, and secured with a good lashing, passed through both eyes over the topmast rigging; they hang close up underneath, and well before, clear of the hanging blocks. I have seen this block strapped as follows: both ends spliced together, the block seized in, leaving an eye above the block sufficiently large to take the lashing, which is passed over the rigging. But the long and short leg is preferable, for if great care is not taken in passing a lashing, which will require to be very long, one part may bear more strain than the other, and be liable to snap. There is one brace block on each side. The braces, after being clenched on the stay, are rove up through the blocks on the yard, down through those at the mast-head, through lubber's hole, and through bitts or leading blocks, as before.

#### STANDING PART TO MAST-HEAD.

Instead of being clenched to the stay, they are clove-hitched round the topmast-head, or an eye spliced in each end, and lashed. Rove through the blocks on the yard, through the blocks on the stay, then through the block in the cheek of the main mast, and through bitts or leading blocks, as in first plan.

If fitting a ship, I should prefer the hauling part to the mast-head, being a greater support to the yard, particularly when carrying a heavy press of sail, with all reefs out. If the hauling part is to the stay, and standing part to the mast-head, or both parts to the stay, in bracing up, under low sail, the yard coming in contact with the spread of the topmast rigging, and the hauling part, pulling the yard down, it is liable to injure it, which is one advantage gained by the hauling part being to the mast-head. Any one looking at a topsail yard bracing up, with the foresail hauled up, will also see the advantage of taking the brace to the main topmast head.

#### MAIN TOPSAIL BRACES.

Two single blocks are seized into single straps, fitted as those for the fore topsail braces, and lashed over the eyes of mizzen topmast rigging, close up underneath. One end of the brace is rove through this block from forward aft, taken down abaft the mizzen top, and clenched or spliced into a bolt, well parcelled, in the mizzen chains. The other end is taken outside all, as fore topsail braces, rove down through the block on the yard, and back through a block strapped into a bolt in the spider hoop round the mizzen mast, through the bitts or a leading block by the mast, or into the side. These braces are sometimes

clenched round the mizzen topmast-head; but the former is generally approved of, giving more support to the mizzen topmast. There are other ways of reeving the main topsail braces, but the way stated, is in most general use and the best.

#### MIZZEN TOPSAIL BRACES.

The standing part is clenched or spliced into a bolt in the mainmast-head, the other end taken aft, rove through the block on the yard, through another block strapped into a bolt in the mast-head, through lubber's hole through a sheave in the main bitts, or fair leading sheave in the side.

I have seen the standing part taken round the mast-head, and clenched to its own part; also the block strapped round in the same way. A cheek is often nailed on each side the main cap, and the standing part spliced into an eye in the pin of the sheave. This, like all other plans (except in a few instances) where blocks are dispensed with for neatness, never answered well.

#### SWAYING UP LOWER YARDS.

The jeers are brought to the capstan, or manned; if brought to, take three turns round the barrel, and hold on the end, which must be the upper turn. Heave round, or walk the yards up, taking in the slack of the lifts, and having a double whip from the mast-head on to the end

of the chain slings. If the lifts are fitted with lizards, hook the jiggers on before swaying. When up, pass the slings over the cleats on the after part of the mast-head, and secure them with the ring on the chain for the purpose; reeve the truss pendants and falls, truss close to, square the yard by the braces, and then by the lifts.

#### GETTING READY TO CROSS TOPSAIL YARDS.

Reeve the lifts through the sister blocks, send the end down through lubber's hole into the chains. On each side, half way up the main rigging, splice a lizard into the lift, as on fore or main; if a large ship, reeve the end of the lift, if single, through a single block in the chains, strapped round a dead eye strap, or into a bolt close to the block. When the yard is across, and nearly down on the cap, form an eye by crossing the ends over the mast-head parts, securing them with a throat seizing. If a double lift, reeve the end from this block through the side, and pull up on deck. I have seen jiggers used on double lifts. The general way in small ships, is to turn a thimble into the end of the lift, and set it up with a laniard, rove through a thimble, strapped round a dead eye strap, or bolt. In squaring yards, the jiggers are hooked to the lizards (the double block), the single to a Blackwall hitch or cat's paw in the laniard. When fitted as above, the lower

is hooked to the eye formed by crossing the end, and racked to its own part when square, and jiggers taken off. When jiggers are clapped on lifts to bouse the weather yard arm up, the lower block is hooked to a bolt, and not to the lift or laniard.

#### DOUBLE LIFTS.

The standing part is clove-hitched round the shroud, underneath the sister blocks, rove through the block on the yard, then through the sister block, and on deck.

Why should not the standing part be clenched or hitched over the block, or round the mast-head?

Because the reef tackle will cross, and probably chafe it.

#### CROSSING THE YARDS.

Reeve a hawser through one of the hanging blocks, send one end down before all, the other through lubber's hole, and through a leading block on deck, take a round turn, and timber-hitch the hawser round the slings of the topsail yard, and stop it along the larboard yard arm if got up on the larboard side, and the contrary. Overhaul well down to main or fore rigging the starboard lifts and braces, the larboard one into the top, and stop them ready for rigging. Man the hawser, and sway away. When the upper yard arm is clear of the top, put over the brace

and lift, or block, and sway higher, rig the lower yard arm, take in the slack of the lifts and braces, then cast off the stops on the upper yard arm, and when the yard is well up, take two or three turns with the parrel lashing, bouse well up the starboard or lower lifts, overhaul the larboard, and the stops being all cast off, the yard will fall across. Secure the parrel, square the yard by the braces and lifts, and cast off and unreeve the hawser.

#### TOPSAIL TYES.

Have blocks spliced into one end, the other rove through the hanging block at the mast-head, then from aft through the block on the yard, up through the thimble at the mast-head; a half-hitch is taken, and the end secured to the yard part with a good round seizing. The tyes are, generally, now rove sufficiently long to send the yards up and down with, and when not wanted for that purpose, are stopped up and down the topmast rigging. This saves much time and trouble, and answers extremely well, and will do to sling the yards when going into action.

#### FLY BLOCKS.

The blocks spliced into the tyes are so called. They are large flat blocks, sometimes double,

sometimes single, and often one double and one single to each yard.

I have seen the tyes spliced taut round them, but this is bad, as the rope stretches, and the blocks cant and are split. Also a long eye is sometimes made in the end of the tye, and the fly block is kept in its place by a round seizing passed close above the block. The block is generally seized into a strap, leaving room, above the rigging, to splice the tye in. Either of the latter ways is preferable to the former. These blocks, when the yard is on the cap, should be square with the top rails. Before turning in and setting up for a full due, an iron traveller is put on the topmast backstay, which is seized to the fly block.

What is the use of this traveller?

It prevents the block injuring any person in the top, or striking it when lowering, also keeps the turns out of the halliards.

#### TOPSAIL HALLIARDS,

When rove double. A single block is strapped into, or hooked to a swivel bolt in the after part of the chains ;\* one end of the halliards is spliced

\* Fitted with a hook and thimble is preferable, moused. The thimble is put on the strap before the ends are spliced, and secured with a round seizing ; if a long strap, another seizing is put on close to the block.

into the upper part of the strap of this block, or bent into a becket put there for the purpose, and the end seized. The other end is then rove through one of the sheaves in the double block in the tye, then through the sheave in the single block in the chains, and through the other sheave in the double block, and through a leading block on deck, or through a cheek bolted to the bulwark for the purpose, with a snatch and sheave.

#### WHEN ROVE WITH SINGLE BLOCKS,

The standing part is spliced or bent through a becket in the lower part of the upper or fly block, then through the single block in the chains through the fly block, and through a leading block or cheek as before. There are two fly blocks to the fore and main topsail yards, which are generally fitted in the navy as I have described, and are considered preferable to all others; should one tye be carried away, the other will hold the yard.

#### MIZZEN TOPSAIL TYE.

The standing part is clenched or half-hitched to the strap with the thimble at the mizzen topmast head; the other end rove through the block on the yard, then through the sheave in the hounds of the mizzen topmast, and a single block spliced or secured in the end, the same as fore

and main; another single block is strapped into a swivel bolt in the mizzen chains, and the halliards rove as with two single blocks; fall rove through a leading block or cheek. Some ships have a double fly block.

If the topsail tye is fitted as described, does the block on the yard lay the same as on the fore and main?

No; the sheave must lay athwart, and when fitted with a rope strap, instead of two separate straps, the block must be seized into a long double strap, both eyes or bights lashed underneath the yard. The block can be seized in the third, and the long leg brought up from abaft, and lashed on the foremost quarter (if preferred) with a rose lashing.

#### MIZZEN TOPSAIL YARD,

Is crossed with a small hawser, or yard rope, rove through the sheave in the hounds, and got in its place the same as fore or main.

When the tye and halliards are all rove, the yards should be hoisted eight inches or a foot off the caps, and squared.

#### JIB BOOM

Is taken forward, and pointed through the collars and cap.

**HEEL ROPE.**

The standing part is hitched or clenched into a bolt in the bowsprit cap. A single block is hooked, or a tail block put into another bolt on the opposite side to the heel rope. The heel rope is snatched into the sheave in the heel of the boom, rove through the block in the cap, and led in on the forecastle, between the knight heads, or through a sheave in the bulwark.

**TRAVELLER.**

Is put on the boom. It is an iron ring covered with leather, having a hook and shackle on it, and placed on the boom, hook in.

**FOOT ROPES.**

One on each side the jib boom. They should be long enough, when in their place, to allow a man to stand breast-high along the boom, and are fitted as follows:—Take a piece of rope, long enough to make both, cut it in the centre, and splice one end into the other, making an eye to fit the jib boom end, forming a cut splice. Three, four, or five overhand knots are taken, at equal distances, on the rope, from the eye, according to the length; they are to prevent the men slipping. In each end, splice a small eye, large enough to take a lashing. An eye is some-

times made by taking a round turn round the boom end, and two seizings passed.

#### MARTINGALE

Is a short rope with an artificial eye in each end, to fit the jib boom, and end of the dolphin striker. The eyes are well served, and covered with canvass or leather. The martingale is wormed, and a small twine seizing (snaked) put on, round the worming at equal distances between the eyes; three or four, or according to the length, which must depend on the way the dolphin striker is intended to stand or rake. It looks best when perpendicular to cap or jackstaff. Chain is now supplied for the purpose, as also for back ropes, and is found to answer better than rope.

#### DOLPHIN STRIKER.

It is made as a gaff, with jaws large enough to take the bowsprit; in each horn of the jaw, a hole is made to take the jaw rope.

#### JAW ROPE.

Take a piece of rope of sufficient length to go over the bowsprit, and reeve through the holes in the jaws, and strong enough to hold the dolphin striker. On one end make a wall knot, and crown it, whip the other, reeve it through one of

the holes in the jaw, and haul it close up to the knot. Get a double whip from the fore topmast stay, and get the dolphin striker in its place, then pass the jaw rope over the bowsprit, reeve the end through the other hole in the jaws, take an overhand knot, and take off the whip. I have seen them got out with slip ropes from the bowsprit, but only in brigs or small vessels.

#### BACK ROPES

Are pendants, middled and served in the centre, the round of the dolphin striker, both parts crossed, and secured with a throat seizing. The service should be long enough to take in the seizing. In the ends splice a single block, another single one is strapped into a bolt in the bow for the purpose, or fitted in a strap, with a hook and thimble, hook moused. A gun-tackle purchase is then rove, the standing part of the fall spliced round the pendant, in after end of the block, rove through the one in the bow, over the head rails, back through the one in the pendant, and through a fair leading sheave in the forecastle bulwark. These falls, after being pulled up, are racked together outside the bulwark. If belayed on the forecastle, they should be seized to their next part, so as not to be let go by mistake.

## STANDING GUYS.

One pair on each side, an eye is made to fit the boom end by passing a round seizing, when in their place, both ends are rove through thimbles on each yard arm of spritsail yard (when crossed), or holes bored for the purpose. Then both brought together, a thimble first put on, and a long splice made with both ends.

Round the thimble strap a double block, and into a bolt in the fore side of the cat-head, for the purpose, strap a single one; or fit a block into a strap, with a hook and thimble, and hook it to the bolt, and mouse the hook. Reeve a fall through these blocks, and bring the hauling part in on the forecastle, through a fair leader for the purpose; the standing part will be in the strap of the single block.

## TRAVELLING GUYS

Have an eye spliced in each end, and are seized on to the traveller on each side. The ends are rove through a thimble on the inner quarter of the spritsail yard, and often set up; the standing guys being rove in the blocks as a fall. When this is done, a double block is strapped into the bolt in the cat-head, the travelling guy rove through one sheave in it first, then through the one in the double block in the

standing guys, back through the other sheave in the block in the cat-head, through the other sheave in the double block on guys, and in on forecastle, as before. They are much better rove independent of each other, a gun-tackle purchase being fitted on the travelling guys. These guys are used when easing a jib in, but I never saw one stand well, especially in large ships where the bowsprit steaved much, without bousing the jib sheet down with a slip rope, as easing in lowers the after leach so much, that the hole for the sheet is too high to get it properly aft; and unless boused down, is always drumming with a slack leach. An inner jib is decidedly better, being narrower in the foot, and intended to be set half boom out, or a third in; it is cut so as not to throw an eddy wind into the foresail, which fore topmast staysails always do, and which a jib eased in also does.

#### JIB STAY.

There are several ways of reeving and setting up this stay, and many different opinions as to which is the best, over or under the crosstrees.

#### SET UP UNDER THE CROSSTREES.

Seize a clump block into a good stout strap, large enough to take the stay. The strap fitted

with two lashing eyes, and lashed over the eyes of the fore topmast rigging, keeping the block close up underneath, clear of the hanging block. On the opposite side, seize into a strap, fitted in the same way, two single blocks (the lower a small clump), one over the other, a seizing being passed round the strap between both blocks, and another over the upper one, and lash them the same as the stay block on the opposite side. Through the upper block reeve the jib halliards; through the lower one, fore topmast staysail or inner jib stay. The jib stay is rove through the clump block, and an eye is spliced in the foremast end, and either hooked to the traveller, or lashed round the boom end. In the other end (which is sent through lubber's hole), about half-way up the foremast (if a new stay), splice a single block. Through this reeve a runner or pendant; in one end splice a double block; into a bolt in the deck, close to the foremast, strap a double block, or hook one. Through these blocks reeve a fall, putting the standing part into the strap of the lower block, one sheave in the lower block answering as a leading one. The other end of the pendant secure into a bolt in the deck, sufficiently far from the block to prevent the pendant taking turns in; this will make a runner-and-tackle purchase on the jib stay, which should always be

racked when pulled up, in case of being let go by mistake. Also the guys, for the same reason. When the jib stay is rove as above, the stay being on one side, and halliards on the other, the jib is supported on both tacks, and the stay causes no injury to the foot of the topgallant sails, which is the case over the crosstrees; and the sheets can never be got close home with one reef in, unless very much roached; also, the mast is much more able to bear a press of sail with the jib stay under the rigging than over, merely trusting to the strength of the mast-head.

The only reason I can see for taking it over was, some jibs not standing well, having the after leach too long; and as dock-yard sails are always cut by the same rule, it was found necessary to keep it there, it being impossible to get any thing altered, "as it was not according to the establishment." This was the general answer; and I have seen, when attending myself, fathoms of rope drawn, according to the warrant, which had not been used in the service for several years, and which lay in a fore-hold, or store-room (unless worked into junk, or used for some purpose for which it was not intended), returned useless, on coming home to be paid off. This may, perhaps, be better now; and as for our sails, Captain Symonds has at last

broken through the charm of the establishment, and given sails that will stand to our ships. In the Britannia, her superiority of sailing, when off Lisbon, may in a greater part be attributed to his sails. One of the ugliest sails ever seen, was a line-of-battle ship's jib, O. S., and at present there cannot be any thing more beautiful.

STAY AND HALLIARD OVER,

Are rove through cheeks bolted to the topmast-head, over rigging, and set up as above.

I saw a line-of-battle ship's fore topmast cross-trees have a plate across with bolts, secured in the trusseltrees, between the topmast-head and heel of the topgallant mast, and the jib stay and halliard blocks strapped into them. The trussel-tree being plated, made up for the strength lost by boring a hole in each side. This plan answered extremely well, after a trial of four years, and the crosstrees used again in a second commission.

What are the advantages of having the jib stay to the traveller?

The jib can be eased in, and shifted quicker, than on the forecastle. If secured at the boom end, it has to be unbent from the hanks, or the stay unlashed from the boom, which takes up much time, and in blowing weather is not safe. When an inner jib is used, I would have two travellers, and

have the outhauler to hook to the shackle on the traveller, so that it would answer for both jibs.

#### INNER JIB STAY

Is differently fitted, with a collar and two lashing eyes abaft the topmast-head, the same as the fore topmast stay, and answers as an outhaul, the traveller being fitted with a roller instead of shackle, the stay rove through it, and through a lashing block at the boom end, and set up on the forecastle with a gun-tackle purchase. I have also seen a block lashed at the boom end, when at sea, for the outhaul, when the standing jib stay did not lash; and as the inner jib was generally bent as a staysail, in harbour, this was then taken away, and the stay got down. A block is fitted under the topmast rigging for this stay, then it is secured to the traveller, and set up on deck with a luff-tackle purchase. The block put in the same strap as the standing jib stay, the inner jib halliards rove through it, and the stay through the block, under the jib halliards.

#### STRAP FOR JIB BOOM

Is a double strap, both ends spliced together, and is long enough to go round the boom (between the first and second, or second and third bobstay collars) and bowsprit, leaving room for lashing on each side.

## PLACING THE RIGGING ON THE BOOM.

First, the horses or foot ropes, jib stay (if lashed), martingale, and guys, I have seen the martingale secured round the boom end (cutter stay fashion); it looked very neat, and has an advantage over the artificial eye, in case of stretching, as it can be so easily taken up.

## PLACING THE RIGGING ON DOLPHIN STRIKER.

Back ropes and martingale. Below this rigging, in the end of the dolphin striker, are two or three sheaves, and one close above it, and I would cut another in the lower part of the jaws, for fore topgallant stay.

## GETTING THE JIB BOOM OUT.

The heel rope is manned, flying boom-iron driven on, and the boom hauled out, and the strap placed in a score in the heel for the purpose, and both bights lashed together; then another lashing passed round the strap, between the boom and bowsprit, and the strap well frapped together. The heel being well secured, set the back ropes well up, and get ready for crossing the spritsail yard.

How long should the strap for the heel of the jib boom be?

When spliced, the round of the bowsprit; the heel of the boom giving the space for lashing.

**FITTING RIGGING FOR SPRITSAIL YARD. PARREL**

Is in one piece; splice an eye in one end; worm, parcel, and serve it, and it is sometimes covered; take it round the spritsail yard, keeping the eye on the upper side, and pass a round seizing close to the yard, allowing the eye to be a short distance beyond the seizing. When the yard is across, the other end is taken over the bowsprit round the yard, up again over the bowsprit, rove through the eye, and seized to its next part; and a round seizing passed round the parrel, close to the yard, on the opposite side to the first eye seized. It can be fitted with two eyes, both lashed together, if preferred.

**TYE**

Is made like a long strap, both ends spliced together. In one end a hook and thimble is secured with a round seizing, the thimble put on with the hook before splicing; it is wormed and served; it is then taken round the yard, and the hook end rove through the bight, and hauled taut round the yard, a round seizing is passed round the bight close to the yard, to keep both parts together. Chain is now generally used for this purpose, and a strap of iron fitted round the yard, to which it is shackled or hooked. It is long enough, when the yard is across, to hook

to a bolt in the bowsprit underneath, inside the cap; for the purpose. Chain is decidedly preferable.

#### FOOT ROPES.

Fitted the same as crossjack yard; one stirrup is sometimes put on each yard arm; the end must be unlaid and plaited, there being no jackstay bolts.

Crossjack, fore topsail, and spritsail yards, are the same size; also, main topgallant and mizzen topsail yards.

#### LIFTS

Are single; have an eye spliced in one end to fit the yard arm, splices served over; are taken over the jib guys, and rove through the eye bolts in the cap, and set up on the forecastle; blocks are sometimes strapped into the bolts, but it is quite unnecessary. Bolts are often driven into the fore side of the cap, and lifts led through; when this is done, they generally set up there with laniards, and thimbles spliced into the end.

#### BRACES (SINGLE).

A single block is strapped into a bolt in the cheek of the foremast, on each side. The brace has an eye in one end, to fit the yard arm; the other is rove through the single block; another

single block is spliced into the end, and a luff-tackle purchase is rove with it, and a double block in the deck; one sheave answering for a leading one.

#### ROVE DOUBLE.

A single block is strapped round the yard arm, the standing part of the brace made fast with a clove-hitch, and the end seized up to one leg of the fore stay; the other end rove through the block on the yard, and through the other in the cheek of the foremast, through a leading block in a bolt in the deck.

#### THIMBLES FOR GUYS

Are double strapped, and secured, after being placed round the yard and in the score of the thimbles, with a round seizing, passed between the thimble and the yard. The splices laying in the upper side of the score in the thimbles.

What is the use of double straps?

It allows the thimbles to lay fair with the yard, for the guys to lead through; if single, they would stand fore and aft.

#### CROSSING THE YARD.

Clap a good salvage strap well up the fore topmast stay; to it hook a snatch or leading

block large enough to take a hawser, reeve it, and timber-hitch it round the starboard quarter of the spritsail yard (if got out on the starboard side), and stop it along to the larboard quarter, and half-way out the larboard yard arm. Overhaul down the braces and lifts, and sway out, keeping the larboard yard arm under the bowsprit; when clear on the larboard side, put over the brace, or block, and lift, and haul out; when nearly out, but before clear of the head rails, put over the starboard brace, or block, and lifts, haul on the hawser, starboard lift and brace, and cast off the stops. When it is sufficiently far out, pass the parrel, take a turn, or hold well on the end; hook the tye, and square the yard; cast off the hawser, and unreeve it; reeve the jib guys, and set all taut.

#### JIB BOOM SECURED WITH OUTRIGGERS.

Two short gaffs, with jaws to fit the bowsprit, being made like the dolphin strikers, are secured to the bowsprit with jaw ropes, where the spritsail yard is carried, and rigged as follows:—

#### FORE GUYS

Are made of well-stretched rope, and equal in strength to the jib guys together, each fitted with an artificial eye to fit the jib boom end and out-

rigger; they should be wormed with small rope, parcelled and served, or covered in the eyes; four-stranded rope is preferable, not being liable to stretch so much as three.

#### AFTER GUYS

Are fitted with an artificial eye in one end, to fit the outrigger, a thimble spliced into the other; they are the same size as the fore, and wormed the same way.

If made on purpose, and four-stranded, the thimble is kept in the bight with a round seizing.

#### BOBSTAY, OR LOWER GUY.

Fitted the same as the after, only shorter; the length of this depends on the drop intended to be given to the outrigger, which should never be less than the spritsail yard, when well braced up.

#### PLACING THE RIGGING.

Lower or bobstay guy goes on the outrigger first, then the after one, and then the foremost, and over the jib boom. The after one sets up to a bolt by the cathead, well down; the lower to a span shackle in each side of the cutwater. These were fitted to the *Britannia* by Sir Pulteney Malcolm, while bearing his flag, and still continue in her.

The guys were eight-and-a-half-inch, wormed with three-quarters ; four-stranded rope, if made on purpose, can have the eyes formed when laying up. They were considered, by every officer who served in the ship with them, and the spritsail yard, to be decidedly preferable to the latter, and allowed a reduction of fifteen men in each watch on the forecastle. She carried her jib with treble-reefed topsails, when a ship of her own class was obliged to haul it down ; and when working into the Tagus, with treble-reefed topsails and reefed driver, two jibs were blown away, one after another, the boom standing as stiff as if at an anchor.

The largest brace allowed is four-and-a-half-inch rope, and if double, the strap of the block will probably be of the same size. To this the boom depends for support on a wind ; and if let go by mistake (not being uncommon), it is likely the boom will follow ; the longer the rope the less strength ; and, consequently, a short pendant of eight-and-a-half-inch, which cannot be let go by mistake, has a decided advantage over a rope of four-and-a-half with the latter possibility. Objections were started to their not being long enough to set a spritsail. When squared (the spread being very little reduced, allowing the diameter of the bowsprit, and with a small jack

yard) the common spritsail can be set. Another objection was, its being a spare topsail yard.—*Stow it on the booms.* And as these outriggers are little more than half the weight of the yard, must considerably ease the bowsprit, foremast, and ship in pitching. The *Talavera* was fitted with them, and they answered well. I believe now they are also in the *Caledonia*.

It was, at one time, intended to remove the outriggers, and cross the spritsail yard, in the *Britannia*. Two of the oldest officers in the ship, and, if not the best boatswain in the service (one of them), knowing their advantage, requested they might remain during the winter, which was granted. If the lower guys are fitted with a luff-tackle purchase to the end of the outrigger, and the fall rove through a leading block close to the jaws, and then in on the forecastle, they can at any time be squared, and a spritsail set.

“One of the old school” attacked the outriggers under the name of “boar’s tusks;” but as it is probable that he had not seen much about ships for a number of years, his prejudices about “things doing very well before” may induce him to say, ships got out of harbour against wind and tide quite as well a number of years back, with dock-yard launches, as they do now with a steamer of two hundred horse power.

**WHISKERS.**

Are iron outriggers from the cathead, with sheaves in them, for the guys to reeve through, and set up to the fore chains, the same as when rove through the spritsail yard. This plan is much in use in small vessels ; but the boom is supported almost entirely by the martingale ; as the guys being considerably above the boom, and its always topping up when the sail is set on a wind, the more wind, the greater the strain on the martingale ; and should the guys be carelessly pulled up, the boom must depend on the former entirely for support. With the outriggers the dolphin striker is one half the length, as with the spritsail yard or whiskers, which is also a great weight off the bowsprit.

**SPANKER BOOM.**

Has jaws to fit the trysail mast, abaft the mizzen mast ; if none, to fit the mast, a sheave in the end for the outhaul ; it rests in a crutch on the taffrail for the purpose, when the sail is not set.

**SHEET AND GUYS IN ONE.**

Into a bolt, with a thimble, in each quarter piece, strap a double block with a single strap. Seize into two grummet straps, worked round the boom (wormed and covered), two single blocks, one on each side, just outside the taffrail.

Secure these blocks in their straps with a round seizing passed between the block and the boom. The rope for the guys is middled and cut, then a cut splice made to fit the boom end. Take the larboard guy, reeve it through one of the sheaves in the double block on the quarter, through the single block on the boom, through the other sheave in the double block, and through a fair leader in the side or sheave, and pull it up on deck. The starboard one is rove, in the same way, through the block on the starboard quarter.

#### SHEET AND GUYS SEPARATE.

A double block is seized into a double strap, round the boom inside the tafrail; another is strapped into a bolt in the transome, or a short horse, with an eye formed in the centre. A single block is strapped round a thimble on the horse, or into a bolt in the transome. A small thimble, large enough to take the sheet, is seized on the strap of the double block on the boom. The end of the sheet is rove through this thimble, and timber-hitched round the boom; the other end is rove through the lower double block, the hauling part through the single one.

If two double blocks only, and the fall to lead from the lower one, where should the standing part of the sheet be secured?

To the lower block, or horse.

## GUYS.

A pendant is fitted to the boom end, one on each side; into each end splice a single block; another is strapped into a bolt on the quarter, and a gun-tackle purchase rove; the fall leading from the block in the quarter through the bulwark, and worked on deck.

What is the length of the pendant?

From the boom end to the tafrail, the spread of the stern, giving room for the tackles to work. I saw a one-hundred-and-twenty-gun ship's boom worked in this manner, and it answered extremely well.

## TOPPING LIFTS.

A cheek, with a sheave in it, is bolted on each side of the mizzen trusseltrees, under the rigging; instead of this cheek a single block is often strapped into a bolt, with a thimble in it. On the boom, outside the tafrail, is an iron hoop, with an eye-bolt in each side, with thimbles in them. Inside the tafrail is a snatch cheek, with a sheave in it on each side of the boom. Sometimes an iron hoop inside, with two eye-bolts, having single blocks strapped in, are preferred.

Parcel the thimbles in the outside bolts, and into them splice the topping lifts; the other end reeve down through the cheeks on the trusseltrees or block, and snatch them to the boom, or

reeve them in through the blocks, and splice a parcelled thimble into the end; when stretched, point over the splice.

#### TOPPING LIFT TACKLE

Is made with a fiddle and a single block; the straps fitted with hooks and thimbles; blocks secured in their places with round seizings, a small flat one being put round between both sheaves of the fiddle block. A fall is then rove, the standing part being spliced into the strap of the single block, the hauling part through the largest sheave of the fiddle, or one next the hook; it is hooked, as required, to the thimble in the topping lift and eye-bolt in the jaws of the boom underneath, or a strap round the jaws with a thimble in.

#### TOPPING LIFTS SET UP IN THE CHAINS.

After being spliced into the bolt, and rove through the cheek or block in the trusseltrees, splice into the end, half-way up the mizzen rigging, a double block, and strap a single one into a bolt in the chains, and reeve a fall, the standing part to the single block. I saw this tried in an eighteen-gun brig, and it answered extremely well, was much easier overhauled, and quicker pulled up.

## A BRIG'S BOOM.

**Sheets.**—There being so little boom over the stern, guys are not used, or necessary. On each quarter strap a double block, and one on each side of the boom, in separate straps; through these reeve the sheet; the standing part from the strap of the quarter block, and hauling part through one of the sheaves in the quarter block. In working with the watch they were found very useful; one man eased over, while two more took in the slack.

## GAFFS (SPANKER)

Have two iron hoops, with eye-bolts in them, driven on the gaff, which is divided or measured into three; the first hoop one third from the end, and the other a third inside it.

## PEAK HALLIARD BLOCKS

Are generally iron strapped, with hooks turned up towards the sheave, and are hooked to the bolts on the gaff, hook point up, and moused round the back of the hook, and through a small hole in the point.

## THROAT HALLIARD BLOCKS.

Sometimes two sheaves are cut in the jaws of the gaff, and a chock with two more put in be-

tween the after trusseltrees of the mizzen mast; a fall rove, the hauling part from aloft.

**FITTED WITH TWO BLOCKS.**

A double block is seized into a double strap, put through an eye-bolt in the jaws, round a thimble; another double block seized into a large double strap, wormed, parcelled, and served; both bights put through the square hole in the after part of the trusseltrees, and lashed together over the eyes of the mizzen rigging on the fore side.

**DERRICK BLOCK**

Is a double block, generally iron strapped, and hooks to a plate bolted on the mizzen cap, point up, and moused.

**DERRICK, WITH ROPE STRAP.**

The block is secured in a long double strap, with a round seizing, the strap wormed, parcelled, and served; both bights taken on each side of the mizzen cap, allowing the block to hang from the centre of the after part. Both bights are then lashed underneath, before the mast-head; the strap should be frapped well together across the centre of the cap, on the upper side, to prevent too much strain on the seizing.

**REEVING PEAK HALLIARDS.**

The standing part is clenched round the mizzen mast head, underneath the block. Then reeve the other end through the inside block on the gaff, from forward aft, then through a sheave (up) through the double block or derrick, through the outer block on the gaff, from forward aft, and down through the other sheave in the derrick, and through a leading sheave in the bitts or block on deck.

**REEVING THROAT.**

The standing part is clenched round the mizzen mast head, close over the eyes of the rigging, taken through the same hole between the trusseltrees as the strap, and rove through a sheave in the jaws, or block, then through the block or chock, and through a leading block, or bitts on deck, on the opposite side to the peak halliards.

What is the advantage of having the hauling part of the peak halliards through the outer block on the gaff?

In hoisting, it meets the strain first; and in lowering, drops the peak quicker.

**SINGLE VANGS.**

Take a piece of stout rope, middle it, and half-way the distance from the gaff to the deck splice

a single block. Strap another into a bolt in the quarter, and reeve a gun-tackle purchase, having the standing part in the block in the vang, and led from the block on the quarter through a fair leader in the bulwarks.

This is a bad plan, for when taking the sail in, or lowering for reefing, when the two blocks come together, the vangs are of little or no use; and I have seen much time lost, and more than one accident occur, by the gaff knocking about. They are considered neater than double ones.

The pendants are seized round the gaff, outside the earing cleats.

#### DOUBLE VANGS.

Seize into each bight of a long grummet strap a single block, and secure the strap round the end of the gaff, outside the rigging cleats, with a lashing passed round the strap underneath the gaff and over each block. Splice the standing part of the fall into a bolt on the quarter, reeve the other end through the block on the gaff, and through a single block strapped into a bolt also in the quarter; then lead the end through a fair leader in the bulwarks. Blocks fitted in this way are called span blocks. This is decidedly the best plan, as the purchase can be of use until close down.

**BRAIL BLOCKS.**

Divide the gaff into three, from inside the earing cleats to the jaws. At one third from the end, seize two single blocks, fitted as for double vang; two thirds from end, seize two more. In the jaws, close to the bolt for earing, seize two single blocks, longer size, strapped the same way, and secure them well to the bolt on the upper side, for the throat halliards\* (if one); the seizing or lashing of these blocks, as well as those outside, is passed underneath, round the strap over the block, and should be passed on the bight. When sufficient turns are taken, half-hitch the end round the lashing on each side, close to the blocks, and it will bring the lashing close together, and keep the blocks in their place on the gaff.

**LEADING BRAIL BLOCKS.**

Close to the jaws, outside the single blocks for the throat brails, secure two double ones, strapped the same way as the outer blocks used for the peak brails. The peak brails, after being rove through the outer blocks, are led through the double ones in the jaws and on deck, through leading blocks or bitts. Gaffs have been fitted

\* If none, two small screw bolts should be put in to secure the strap to.

with cheeks instead of blocks, and sheaves cut in the jaws for the throat brails, and fair leaders; but I never saw them answer well. Peak brails also often lead straight from the gaff to the side; but I have seen them carried away, from the vang being slack, when the sail is brailed up, or let go by accident.

#### GETTING UP THE GAFF.

Man the throat and peak halliards, the former best, and sway the gaff up; when high enough rack the halliards with spun-yarn to their own parts aloft, and the halliards can be hauled up in the top out of the way.

#### THROAT BRAILS LED FORWARD.

After being rove through the blocks in the jaws, reeve them through two single blocks, one on each side, secured to the fore part of the trussel-trees, in a direct line with those in the jaws; and take both ends forward, and reeve them through the main bitts. In taking in a large heavy sail, they will be found of great service.

#### GETTING TOPMAST STUDDING SAIL BOOMS UP.

All studding sail booms have a hole in one end for a heel lashing, and sometimes a sheave in the other for the tack. Take a piece of rope,

long enough for the heel lashing, make a knot in one end (a wall and crowned), reeve it through the hole in the boom end, and haul through to the knot; whip the other end; with the latter take two half-hitches, a little inside the sheaves or outer end, and seize the end to the boom. Take a tail block, and half-hitch it half-way out fore or main topsail yard, on starboard or larboard yard arm, according to the boom required to be got up. Through this block, reeve a rope as a whip (if a heavy boom, it should be a double one), bend one end to the span made with the heel lashing, so as to balance the boom; the other reeve through a leading block on deck. Stop the hoisting part to the boom end by the sheave, and sway away. When high enough, cut the stop at the boom end, and the boom will hang in the whip, on a line with the yard; point it through the irons, cast off the whip and span, and secure the heel lashing.

#### TOPGALLANT STUDDING SAIL BOOMS

Are fitted and got up the same way, with a whip rove through a tail block on the topsail lift.

#### TOPGALLANT RIGGING WITH FUNNEL

A copper funnel is fitted to travel on the royal pole: if two shrouds on each side, they are

brought together, and seized as a topmast shroud, with a round seizing, the eye served, also the legs of the shroud, the length of the hounds down.

#### SHROUDS SEIZED TOGETHER.

Instead of forming an eye, bring both shrouds together, and pass a round seizing on each side, as close as possible to the funnel, and sufficiently taut to require being driven on. This is more for neatness than any other advantage, and one of the few instances where nothing is sacrificed, as I have seen it, and found it answered. The Donegal's rigging was fitted in this manner, and no breast backstays, so that it was a fair trial; and although belonging to an experimental squadron, where a heavy press of sail was carried every day, the masts stood well, and the rigging never complained. The Bellette was fitted with them, and four years on the North American station proved they were quite equal to the old plan. I always was of opinion that breast backstays were of no use, and from what I saw in the Donegal, am now fully convinced on this subject; and, if fitting a ship, would never have them.

What is the objection to having breast backstays on topgallant mast?

In pulling up when the ship is head to wind in stays, it is likely the mast may be got more

over than the topmast, which, when the sails fill, will of course bring a deal of strain on the backstay; and consequently the head of the topgallant mast over to windward. This I have often seen, and pointed out at the time, as one of the failings of a breast backstay being on a mast, which is so easily altered from the perpendicular. The breast backstay is generally the same size as the rigging; and as it is very probable the shrouds may not have been set up for some days, the backstay, which is pulled up on each tack, with several men on a gun-tackle purchase, must bear all the strain, which may cause it to snap before the shrouds could assist in supporting the mast; and it is very likely the jerk of the backstay going, would either spring or cause the mast to go over the side.

#### BREAST BACKSTAYS.

Splice an eye in one end, and seize a single block into a long one, in the other, and secure it in its place with a round seizing, close to the block. The backstay secure to each side of the funnel, with a lashing passed through the eye and round the funnel. This is pulled up on deck, with a gun-tackle purchase, rove through the block in the end, and another strapped into a bolt in the chains, and led in through a fair leader in the bulwarks.

AFTER BACKSTAYS.

A pair on each side, and seized as shrouds, or an eye formed. They are served sufficiently far down, when clear of the mast-head or funnel, or seized together, to be square with the service on the topgallant rigging. A dead eye is turned into each end as a shroud, a laniard rove through it, and another in the after part of the chains for the purpose.

RIGGING FORE TOPGALLANT MAST.

On the funnel, place first, on the after side, a strap with a thimble seized in for the main royal stay; then, on each quarter, or close to where the foremost shroud will be, place two single blocks, seized into a grummet strap, to fit the funnel, one for flying jib stay, the other for the halliards. Then put over the stays, with running eyes. When no funnel, these straps are fitted with lashing eyes, and are secured over all.

MAIN.

Standing rigging the same; no thimbles, and seldom blocks. I have seen them for fore royal braces.

MIZZEN.

Standing rigging the same; no blocks or

thimbles. Sometimes two small blocks go on the fore side for main royal braces; but thimbles are generally used in show ships. Span blocks are best.

Next place the first pair of shrouds on starboard side, then the larboard breast backstay and after ones.

Before getting the shrouds over, seize into each, close to the seizing, two rollers, fitted with an iron strap, formed to take the shrouds; they should be made like sister blocks, and seized in the same way. Sometimes only one thimble is seized in; then lashing blocks must be fitted for topgallant studding sail halliards; if two rollers, the halliards reeve through the upper one, topgallant lift through the lower one.

#### FUTTOCK STAVES IN TOPMAST RIGGING,

Are iron bolts, parcelled and served; are seized to the shrouds, the length of the hounds down on the inside; seizings passed as in lower rigging.

#### CATARPIN LEGS ON TOPMAST RIGGING.

Take the length from the starboard foremost shroud round the mast, and to the after one on the same side; get a piece of rope of this length, splice an eye in each end, worm and serve it. There are two on each mast. Seize

the foremost end to the foremost shroud and futtock stave, take it round the mast, and seize it to the after one; secure one to the larboard side the same way. I have seen them go from the foremost starboard shroud straight to the after larboard one, crossing abaft the mast. They are also fitted to set up with thimbles and a laniard, abaft the mast. When this is done, both eyes are seized to the futtock staves on the starboard side, a thimble seized in the bight, and set up, abaft the mast, to the larboard one, with a laniard, seized in the same way.

#### ROYAL RIGGING.

One breast and after backstay on each side, seized as the after backstay on topgallant masts; The breast backstay is pulled up with a gun-tackle purchase; the after one has a thimble turned in, and sets up in the after part of the chains with a laniard.

#### ROYAL STAYS.

As there is no funnel, although one would be a great advantage, splice an eye in the stay to fit the head of the mast, serve it, and over the splice. It goes on next to the grummet, then the backstays.

**WHEN NO FUNNEL FOR TOPGALLANT RIGGING.**

The topgallant stays are fitted as royal, to prevent their getting jammed round the mast-head.

**TOPGALLANT MAST ROPES.**

A sheave is often cut in each side of the topmast cap for this rope to reeve through. I saw them used in a three-decker and an eighty-gun ship, and they answered extremely well.

**SHORT MAST ROPES,**

Have a thimble spliced in one end. The other pointed. They are rove when the mast is rigged, and are used for fidding. They should be sufficiently long, when the mast is landed on the topsail yard, after being rove through the block and sheave in the heel of the mast, and clenched to the cap, to allow the thimble to hang clear of the catarpin legs. If the topgallant masts are too long, so as not to allow their being landed on the yard for rigging, the mast rope must be lengthened accordingly.

**LONG MAST ROPES.**

Rope is often fitted on purpose; but the topgallant yard rope is generally used.

SENDING MASTS UP.

The long mast rope, suppose rove from the starboard side of the topmast-cap. Take the end through the square hole in the fore part of the trusseltrees, and half-hitch it through the fid-hole, and stop it round the hounds and the royal mast-head; send the hauling part through lubber's hole, and through a leading block or sheave on deck. Send a hauling line on deck, and hoist the funnel up, and place it with the rigging on, over the hole in the cap; take the stays forward, and reeve them.

FORE TOPGALLANT STAY

Is placed in the half sheave in the jib boom end, and through the sheave in the jaws of the dolphin striker, and pulled up on the forecastle with a gun-tackle purchase.

MAIN TOPGALLANT STAY.

In the after part of fore topmast trusseltrees is a chock fitted with three sheaves, one in the centre, and two smaller ones, one on each side. Through the centre one reeve the main topgallant stay, turn a thimble into the end, and splice a laniard into it. Strap another thimble round the eye of one of the lower shrouds, reeve the laniard, clap a salvage strap on the stay well

up, and to it hook the double block of a small jigger, the lower one to the thimble round the shroud.

#### MIZZEN TOPGALLANT STAY.

I have seen a hole bored in the after part of the main cap, and also a thimble in a strap, or screw bolt in the after edge, and sometimes a strap round the mainmast-head, close to the cap, with a thimble in; either of these will answer. Reeve the topgallant stay through, and strap another thimble round the eye of a shroud, and reeve the end of the stay through, when set up seize it to its own part. Thimbles and laniards can be used, but are not necessary. Clap a small jigger, or handy-billy, on the stay, same as main.

#### SWAYING UP TOPGALLANT MASTS.

Man the mast ropes, and sway away, having men stationed to bear off and place the rigging or funnel. When pointed through the funnel, place the royal rigging and truck, reeve the signal halliards, and sway higher, land the mast on the topsail yard, and reeve the short mast rope. Reeve the pointed end through a block hooked to the cap on the larboard side, or the sheave; then through the trusseltrees, through the sheave hole in the topgallant mast up through the trus-

seltrees, and secure the end to the foremost bolt in the cap, with two half-hitches, and seize the end. To the thimble in the other end, hook the double block of a burton; hook the single one to a strap round the trusseltree, or one of the bolts in the lower cap. Send the burton fall on deck through lubber's hole, and lead it through a single leading block, and haul it taut; unreeve the long mast rope, and fid the mast. When the fid is in, unreeve the mast rope, if wished. Reeve the ends of the shrouds through the horns of the crosstrees; between the topmast rigging over the futtock staves, and turn a thimble in each end, and strap another round a futtock plate, inside the dead eye of topmast rigging; splice a laniard into that in each shroud, and take two or three turns through each; stay the mast, and set the rigging and backstays up.

How do you stay the mast and set the rigging up?

The single block of the jigger, which is hooked to the thimble, I will hook to a Blackwall hitch in the laniard, and when set up, expend the laniard through the thimbles, and seize the end. On both shrouds of each side clap small jiggers; hook the double blocks to straps on the shrouds, the single to Blackwall hitches in the laniards, and set up and secure the same as the stay.

**TOPGALLANT AFTER BACKSTAY.**

A laniard is rove through the dead eyes, and set up with a jigger, hooked to a strap on the backstay and the laniard.

**ROYAL RIGGING.**

Fore royal stay is rove through the flying jib boom end, and through the lower sheave in the dolphin striker, and pulled up through a fair leader on the forecastle.

**MAIN ROYAL STAY**

Is rove through the thimble at the fore topgallant mast-head, and through another strapped round the eye of a shroud, and when set up, seized to its own part.

**MIZZEN ROYAL STAY**

Reeves through a sheave in the after part of the main topmast trusseltrees, through a thimble strapped round the eye of a shroud, and seized to its own part.

**ROYAL BACKSTAYS**

Are set up with a jigger, if required. I have generally seen it done by hand.

## FLYING JIB BOOM

Is pointed through the iron at the jib boom end. A tail block is put round the neck of the iron, a rope is rove through it, one end taken in on the fore-castle, the other bent to the heel of the boom; this is called the heel rope. Put over the traveller, the horses or foot ropes, fitted as the jib boom, the inner ends seized to the jib boom end, inside the iron. Outhaul the same (no tackle necessary on it in small ships) led in on fore-castle, sometimes through the dolphin striker. The martingale, when single, is secured round the boom end, either cutter stay fashion, clenched, or spliced, or with a running eye, rove through a sheave in the dolphin striker, and in on the fore-castle on the opposite side to the royal stay. When double, a single block is strapped round the boom end, and the standing part spliced round, or into a bolt in the dolphin striker; hauling part as when single.

## GUYS.

One on each side. Spliced into each other, forming a cut splice to fit the jib boom. The other end rove through thimbles, strapped round the spritsail yard. When outriggers, through the same, strapped on the ends, or sheaves, cut

for the purpose; through fair leaders in the bulwarks, and pulled up on the forecastle.

#### SWAYING BOOM OUT.

Man the heel rope, and get the boom out; the heel is placed in a step formed on the foreside of the bowsprit cap, and secured with a lashing rove through the end, and passed round the jib boom. Set the martingale and guys up, and haul taut the fore royal stay, and set the backstays up.

Mast ropes fitted in the bight, and the masts sent up with lizards.

#### LIZARDS.

Take a piece of rope, three or four feet long, splice a thimble in one end, and whip the other. I have seen the end unlaid and marled down like a salvagee, but it is unnecessary. There are two to each mast.

If the hauling part of the mast rope is on the starboard side, reeve the other end through the block or sheave at the cap, through the square hole in the trusseltrees, through the thimbles in the lizards, through the sheave in the heel of the mast, up through the hole in the trusseltrees again, and half-hitch to the foremost bolt in the

cap. Reeve one lizard through the topgallant sheave hole, in the other sheave at the royal mast, reeve the other, and hitch them to their own parts round the mast; one thimble to be on the standing, the other on the hauling part of the mast rope. When the royal pole is pointed, cast off the lizards, and sway away.

The mast rope is sometimes rove through the other sheave or block, and not hitched to the bolt, and a thimble spliced into the end. When this is the case, a burton is hooked to the thimble, a turn taken with the fall, and the mast swayed up with the hauling part of the mast rope. When high enough for fidding, take a turn, and fid with the burton. When fitted this way much time is lost, as the mast rope must be rove on one end; and with a double mast rope, a burton is unnecessary.

Long mast ropes, fitted on either of the above plans, have very little advantage, except in harbour ships, and as rope must be fitted for the purpose, it is much in the way if coiled in the top, and being constantly exposed to wet and dry, is often condemned before it ought to be half worn.

I have seen the mast ropes fitted as follows, and they answered very well:—

The rope is rove as before, stopped to the

topgallant mast-head and royal sheave hole; leaving a long end over the upper stop to hitch to the bolt; before cutting the stops. To prevent the rope slipping, rack both parts together, above the sheave hole in the heel of the mast.

#### TOPGALLANT YARDS.

Foot ropes the same as topsail yards, without stirrups; jackstay secured to the yard with pieces of hide, fitted also the same way.

#### LIFTS

Are single; an eye is spliced to fit the yard arm, the other end is rove through the thimble, or lower roller in the topgallant rigging, and a thimble turned into the end, and a laniard spliced into it, another thimble strapped round a futtock plate, inside the dead eye.

#### DOUBLE BRACES.

A single block is seized into a strap, having an eye to fit the yard arm. If a single brace, an eye is spliced to fit the yard arm, lift and brace marled together, or strap of block, brace inside. Reeving braces. (*See Running Rigging.*)

#### QUARTER BLOCKS

Are double; are seized into a single strap, an

eye being spliced in each end; they lash together on the top of the yard. Foremost sheave for topgallant clueline, after one for royal sheet. There are other ways of fitting these straps—this is the neatest. If the strap stretches it can be easily tautened; if spliced round the yard, it has to be drawn.

#### PARRAL.

A long and short leg. Take a piece of rope, cut it to the required length, splice the ends together round the yard. In one bight seize a thimble, with a round seizing; the other one round the yard; pass a round seizing close to the yard round the parral on the after side, splice a laniard into the thimble; fit a short strap the same way on the other quarter. These straps are sometimes served, and often covered with leather. They are inside the cleats. Grummets can be worked, if preferred.

#### LIZARD STRAPS.

On each yard arm, work grummet straps, seize a thimble in, with a round seizing, passed between the yard and the thimble. A grummet is put on the yard rope to fit the yard arm, when getting ready for crossing.

**LIZARD**

Is a small piece of rope, with a thimble spliced in one end, the other whipped. It goes on the yard rope before being bent to the yard.

**HOISTING IN SPARS, STOWING BOOMS.**

Overhaul down the fore and main-yard tackles, fore and main stays, and lead their falls to the opposite side of the deck the spars come in at. Hook burtons to the lower caps (double blocks), single ones to salvagees round the lower yard arm, close inside the lifts. Send the falls on deck, and pull up the lifts and burtons together, and trusses; brace the fore yard in, and hook on to the spars. They should be always hoisted in as stowed. If the spars are too long to come in abreast, between fore and main mast, such as topmast's fishes, or hand masts, hook the main stay to the strap round the foremost end, and fore stay to the after one; then hook the yards to separate straps. Straps can be made with pieces of stout rope knotted together, or good salvagees, proportioned (of course) to the weight. Man the yards, and walk them up. When clear of hammock rails (if up), haul on the main stay, ease the fore and main yards, keeping the spar square, and get the foremost end inside the rigging, then ease the main stay, and get the spar

in its place on the booms. Small spars can be got in with the main yard, a double whip on main stay, or single guy.

#### STOWING BOOMS.

Starboard side—main topmast, head aft ; main topgallant mast, mast fish, one yard arm piece, main topmast studding sail booms, jib boom. Larboard side—fore topmast, head forward ; fore topgallant mast, mast fish, yard arm piece, hand mast, fore topmast studding sail booms, flying jib boom.

There are several small spars which are equally divided, making the booms as snug and neat as possible. The booms are lashed to span shackles for the purpose. A few small spars should be kept out, to drive under the lashing, to set all taut.

A deal of room can be gained by stowing them amidships, boats on each side, barge or pinnace inside the launch. As the spars are stowed, they should be numbered on each end, and a list taken, and painted on the foreside of the boom boards ; it will take less time in finding what may be wanted. I have seen all the booms unlashed before a spar was found.

What is the reason topmasts are stowed as described ?

They are easier got up; the fore topmast-head being forward, the main aft.

The booms when stowed, are covered with painted canvass or matting made for the purpose.

When the spars are in, square the yards.

#### FORE AND MAIN STAYS.

How are they fitted?

A double block is strapped into a pendant, a hook and thimble spliced into one end; a single block is strapped with a hook and thimble, a fall is rove, the standing part bent into a becket in the strap of the single block; sometimes the double block is strapped, the pendant spliced in, over the seizing. A good strap, with a thimble seized into it, is fitted to the strap of the lower block. A piece of rope is spliced round the strap of the fore stay block, and the other end, when cut to the required length, spliced round the strap of the main stay block, and seized. This is called the span, and is generally the length between the fore and main hatchways. The main stay hooks to a strap with a thimble in it, from round the mainmast-head on the fore side; the fore, from one abaft, fitted the same way. The main one generally comes down alongside the slings, the fore one between the the trusseltrees abaft.

STOWING HOLD. RIGGING AND WORKING  
PARTIES.

As the stowing a ship's hold and ballast depends so much on her build, it is not possible to lay down any rule. Dry provisions should not be stowed under the wet, and should be placed so as not to disturb all the hold to find what is wanted. During the time the ship is rigging, the provisions should be got over, tanks placed, stores, &c., from the hulk; and it should always be avoided, if possible, breaking off men from one job to assist in another. A rigging party should never be employed for any other purpose but the rigging. They will take more pains with their work, if allowed to do it under the directions of the captains of the forecastle and tops, they receiving their orders from the commanding officer or boatswain (not before the rigging party). If they receive their orders and instructions direct from the captains of their respective duties, they will feel more confidence in him, and (of course) more readily obey his orders.

I have often known riggers, on their way off to their ships, after a long day's work, ordered to stop and give a few idle fellows a pull, and perhaps to assist in *only* getting in two or three pigs of ballast or tanks. The little this will add to the equipment of a ship, might be dispensed with,

as no seaman likes to be clapped on a landsman's work, unless in a matter of necessity; and in this case, where the riggers ought to be the best seamen in the ship, their prejudices should be attended to.

One captain of the fore-castle or top should remain on board with a part of his watch. If anything is badly fitted, it is often said "the star-board watch fitted that"; or, "it was larboard watches turn on shore." By selecting the riggers from both watches, and letting the same petty officers always attend, this will be prevented. With a new ship's company, the officer of the party should write down, every evening, the day's work done by the men, and their names opposite, with the opinion of the boatswain and captain of the top; which, on reporting himself to the commanding officer, he should give, as it will be of great assistance to him in making out his station and watch bills. The midshipman of the party should do the same, and give it to the officer commanding with them. He should, every morning, appoint them their respective duties, and change every other day:—those who were working with fore-castle men one day, with the topmen the next. It will be the means of making them pay some attention, for which due indulgence should be given; and their being sent to attend scraping the ship's

sides, tanks, &c., &c., will be punishment enough for neglect. Stopping leave for trifles is bad : it is the severest punishment a commanding officer can inflict, if done with judgment. (I speak as an old midshipman).

I have said before, the rigging should be pulled up as often as possible while fitting, and the guns got in before being set up for a full due ; of course, I mean if the harbour will admit of the ship's going out with them in ; if not, all the carriages should be hoisted in ; it saves time, and they will not get rubbed in the lighters.

#### REEVING PURCHASE FOR GUNS.

I will take the top tackle pendant, reeve it through a top block, secured well to the yard with a good lashing, passed round the hook on the outside quarter ; take the pointed end over the cap, pass it between the head of the mast and heel of the topmast, take two half-hitches on its own part or that from the yard, and secure the end with a round seizing of spun-yarn. Get a single whip upon the main yard, close to the lashing, bend one end to the hook of the top tackle-fall block, hoist the block up and hook it to the thimble in the pendant. Through this and the other top tackle-fall block reeve a fall, clench one end, the standing part round the

main yard, close to the block; the other end, when rove full, through a leading block on deck by the bitts, or break of the quarter deck.

#### PURCHASE ON GRUMMET.

To a good salvagee strap, round the main yard, inside the purchase, hook the quarter tackle, reeve the fall through a leading block.

#### GURNET

Is a pendant, with a thimble in one end; to this hook the lower block of the quarter tackle; holes are bored in the deck for this pendant (after being hooked) to pass through, and a stout hook then turned into the end. The pendant should be long enough to go on the lower deck, and can be taken up for the main or middle. Main deck guns are got in over all; middle and lower through a port. The holes for the gurnet should be bored perpendicular to the centre of the port the guns are to be got in through.

#### SECURING MAIN YARD.

To the bolts in the lower cap, hook the double blocks of two burtons. The single ones hook to salvagee straps, round the yard, close to the lifts; send the falls on deck through leading blocks. Bouse well taut the main lifts and

burtons together, and belay. Then pass round the main yard in the slings, and main mast, a good lashing, the trusses being previously boused well taut, and let the larboard main braces hang slack (if the guns are got in on the starboard side). The burtons are sometimes frapped in with the main lift, between the yard and cap, but I prefer their not being done so, as they will all render fairer when the strain comes on them. It is customary to top the main yard up; but I saw a three-decker's guns got in without it, and as it brings a greater strain on the slings and trusses, should not be done.

What is the use of the lashing round the mast and yards?

It keeps the yard more steady, and supports the trusses.

Why should the main brace be slack?

If the yard is topped up, and the guns got in on the starboard side, the yard will give over to port; lash it as taut as you can, and if the brace is taut, may spring the yard arm. I have seen a yard buckle very much, until quite slack.

#### SLINGS.

Take a piece of good stout rope, twice the length of the gun, splice both ends together, and put the strands in twice each way.

**HOISTING IN GUNS, LOWER OR MIDDLE.**

They come alongside in lighters or lumps. One bight of the slings is put under the neck of the cascaval, lashed on the upper side of the gun, close to the ring outside the arms; a small lashing clapped round the slings, close above the arm.

To the slings, keeping the muzzle well up, hook the purchase, and walk the gun up. When the breech is well up, clear of the lower part of the port it comes in through, take the gurnet through the port, and hook it to a strap put through the breeching ring. Man the gurnet, and walk it well up, the men on the purchase walking back; and remember the gun is never lowered with a turn. The carriage is placed opposite the port, ready to receive the gun, when it is placed in it as the purchase is lowered; and when in, the purchase and gurnet is unhooked, slings taken off, and the carriage rolled forward, and another placed for the next gun. When got in over all, the main stay whip doubled, or the quarter tackle hooked to the strap for main stay, will answer. No gurnet is required.

**CARRONADES**

Are got in much the same way, but do not require so great a purchase. There is a strong piece of wood, to fit the gun, put in the muzzle,

leaving a foot or two outside, one bight of the slings is put over this, and lashed, and the other over the cascaval, and frapped together.

How would you lead the purchase fall?

After being rove through the block, at the break of the quarter deck, it leads through a long strapped block, hooked to a Sampson's post on on the starboard side, then through another to a Sampson's post on the larboard side. The men walk right round. In flush vessels, where there are no Sampson's posts, to ring bolts or leading blocks, well secured.

#### SETTING UP FOR A FULL DUE.

Have all the luffs on deck; lizards, fore and main tackles lashed, runner and tackle falls laid along for pulling up, new laniards ready for reeving, seizings, marling spikes, levers, mallets, grease, small spars for rattling down, triangles rigged ready for hoisting up the mast to secure futtock shrouds and catarpin legs, burton falls sent on deck and rove, all the temporary rattlines cast off, spars got up underneath the bowsprit with gratings for the men to work on, flying jib boom housed, topgallant masts struck. Two men stationed to each dead eye to turn in.

I will let go every thing abaft the masts, commence turning the dead eyes in, and reeve the

laniards, set the bowsprit rigging up, and secure it. Then man the runners and tackles, set taut the after swifters (if mast on a spindle, or wedges in) and get the mast well forward in its place, and secure the stays. Cast off the catarpin legs and futtock shrouds, and set the rigging up, and secure the laniards, and lace the mats on.

How will you secure them?

When racked, take the end and form a clove-hitch down, then rack to the inside parts of the laniard until the end is expended. The hitch is formed between the dead eye and shroud, in the space left by stretching. I have seen a half-hitch taken over, round the shroud, hove well back, the laniard expended round over the dead eye, and the end seized, the ends of the shrouds cut square and capped.

#### RIGGING MATS

Are made with small rope, three-quarter-inch, and are called sword mats. They are generally the breadth of the dead eye, and long enough to take in both, and the laniards are laced inside. They are hardly ever on topmast rigging; they look heavy, and are of no use.

#### CATARPIN LEGS AND FUTTOCK SHROUDS

Are seized on and set up, topmast stayed,

rigging and backstays set up, laniards secured as lower rigging, futtock staves seized on, and catarpin legs; and commence rattling down, and yards squared.

#### RATTLINES.

A coil of small rope is well stretched, one placed on each side of the deck. I have seen two or three on each side, when required to be done quick.

#### SWIFTING IN.

Make one end of a small rope fast round the foremost shroud, take a turn round the next, then the third, and so on, until all are taken in, then back the same way, and half-hitch it round the first. This rope should be just taut, and not so as to bring the shrouds together, the object being to make the rattlines a little tauter when let go. Sometimes swifters are not used, but the rattlines are never so square or look well.

#### SPARRING THE RIGGING.

Take several small spars, such as boat's oars, boat hooks, or any light thing that will answer, and seize them to the shrouds on the outside,

at equal distances, leaving room for three or four rattlines between each.

#### RATTLING THE RIGGING.

Splice an eye in one end of the small rope, and then commence clove-hitching on the second shroud, then on the third, and so on, to the after but one. Then measure from that to the last, and cut it off; splice an eye in the end. Beat well the hitches round each shroud, seize the end to the foremost one with a good nettle, and also the other eye to the after one, and rattle up, taking the shear of the rails.

When it is necessary to rattle quick, take three ends up at a time, and begin at different places. The hitches are formed on the outside, at equal distances. In three or four places, take one rattline to the after swifter; these are called shear rattlines. The rattlines should be from fifteen to sixteen inches apart.

How many swifters are necessary on each side?

Three; one by the shear rail, the others at equal distances. It is not absolutely necessary to have any, as I have seen them done without; they are bad if too taut, for when let go, all the strain comes on the seizing in the eyes, and are

constantly snapping. Two on each side are sufficient for the topmast rigging.

#### JACOB'S LADDERS

Have rope sides and wooden steps. The sides should be four-stranded, the steps put in between the strands, and kept in their place with a Turk's-head worked above and below. They are seized to the two shrouds in the lower rigging, having the greatest space between, and set up to the deck, or form an outrigger in the side. The eyes on each end are generally Flemish, and pointed over; worming makes them look much neater, and when done, should have a neat seizing of twine passed between each step, neatly snaked.

#### WHEN FITTED TO TOPGALLANT MASTS

They lash with two eyes on the foreside of the topgallant mast, the ladder being on the after side, and set up to screw eye-bolts in the topmast cap. With funnels they can be seized in the bight round them under the rigging, and set up the same as above to the cap. They are used instead of rattling the topgallant rigging, which is bad, as they are never square or taut, and the topgallant rigging must be set up to the crosstrees, which takes up time, and getting the

mast up in a rolling sea, is not only difficult but unsafe.

#### BLACKING DOWN.

The rigging being rattled down, the spars and swifters off, I will fid the topgallant masts, and get the flying jib boom out, trice the studding sail booms up, and black the rigging. A mixture of coal tar, Stockholm, and saltwater boiled together, and laid on hot, makes the rigging look extremely well, the salt water preventing the coal tar from injuring the rope. Rum is often boiled instead of salt water, but the latter answers equally well. I have seen the spars kept in the rigging, for the men to stand on while blacking, and think it a very good plan, and they should remain there until dry ; the holidays they leave where seized, being blacked afterwards. In blacking stays, a man sits on a stool, secured round the stay with a bowline knot, and a hauling line bent to it, and led into the top, or through a block at the topmast-head for topmast stays ; the man lowered as he blacks.

Topgallant rigging is better blacked before going aloft, or when fitted, it will be well dry before being wanted.

Bowsprit rigging is blacked by gratings being rigged for the men to stand on.

What is the advantage of mats on the lower rigging?

They prevent the laniards being cut by ropes leading across.

#### REMARKS.

During the time the ship is rigging, there should be different parties of men selected; one to fit gun tackles, breechings, and everything belonging to the guns; they should be under the gunner and *one* of his *mates*, the other remaining on board to look after the duties, oddly enough appropriated to the gunner, such as rigging the main yard, and attending to the main rigging. The gunner's party should be selected from his crew of both watches, and if any shot are to be beat, or stores drawn, he should have a party of marines, under the charge of a non-commissioned officer. All the spare breechings and tackles, port tackles, falls, seizings, &c., should be completed before leaving, and also a good stock of wads, and which there will be plenty of time for doing well while rigging, if the gunner is not broken off to see jeer blocks fitted, and rattlines squared, and many other unnecessary duties I need not mention. If it is requisite for the first lieutenant to have an officer to attend to this duty, which is almost immediately under

his own eye, his having a lieutenant to do so will always enable him to have an officer at hand to answer signals, or other requisite duties, and prevent the necessity of sending a mate or midshipman to make an excuse, when a commissioned officer is wanted on board the flag ship, while he perhaps is on shore, quite unconscious as to the progress making on board his ship; and as lieutenants are excused all watch, in ships fitting alongside hulks in harbour, they should not think it hard to comply with the customs of the service in attending to day duty. Never more than one is required at the dock-yard, and how many would benefit if obliged to attend the rigging of their ships, who have been years on half-pay. In sloops the second lieutenant goes to the dock-yard, or master; the senior mate can attend to the (what is called) gunner's duty.

Another party, in charge of a mate or midshipman, with a boatswain's mate, and some leading men (petty officers if they can be spared), should be employed in making harbour and sea gaskets, nippers, stoppers, boat's fenders, laniards for fire buckets, blacking clews and laniards, and who should be mustered on deck, with their work, in the evening, by the officers of the party, for the inspection of the commanding officer, and by

him (if approved of) ordered to be given in charge of a man appointed for the purpose.

The carpenter, with his crew, should be disposed of as most requisite, two or three, at least, (in a large ship) attending at the boat house, and getting the boats ready for launching, cutting the oars to the proper length, fitting rowlocks, masts, &c., under the direction of the midshipmen of the respective boats, who should be there with one or two of their crew, fitting the gear, leathering their oars, or covering them with sinnet.

Many officers object to stationing midshipmen to boats, but if the most prejudiced only saw the *Britannia's*, appointed by two of the most experienced first lieutenants when in the Mediterranean and off Lisbon, I feel convinced they would acknowledge the advantage of it, as no boats ever did more credit to their ships, or those in charge of them.

As it is not possible to describe everything at the same time, I hope my fitting the small gear will not be thought out of the way, before getting the cables or anchors in; for when fitting, everything goes on (in a well regulated ship) together, without being in each other's way, and my reason for getting the anchors and cables in last is, to get the anchors in their places; if alongside a hulk, the lashings must be cast off, and as they

are not wanted until about to leave, I would prefer leaving them until the last thing, and not get them up until ready for commencing to paint, as it will be found much easier to strike the lines across the stocks when up, than afterwards. The latter reason is quite secondary; I merely mention it; if optional, it may be as well to do it.

#### NIPPERS

Are made by putting a number of good yarns together, and then half-hitched over with spun-yarn, the half-hitches are close together, so as to prevent the yarns from bursting out between. They are generally warped round two bolts, the distance required for the nipper apart, and which will depend, for size and length, on the size of the cable.

#### STOPPERS.

Dog stoppers are made with a piece of stout rope, generally a piece of a messenger; it has a stopper knot worked on one end, and an eye spliced in the other. It is served under the knot, about a foot or two down. Round the stopper, under the knot, a tail is spliced, of good rope, five or six fathoms long; the eye in the other end of the stopper is lashed to a bolt in the

deck, or foreside of the bitts. When this is used on the cable, the tail is passed round it and the stopper, the end stopped.

#### BITT STOPPER

Is sometimes fitted with a knot on one end, rove through a hole in the knee of the bitts, and the other end passed round the cable. I have seen them on the bight, both ends passed round, one over the other, the bight laying on the tier part abaft, both ends taken underneath the cross piece, and dogged along the anchor part. The latter is much the best.

#### RING STOPPER

Is made with a long piece of rope, unlaid at each end, towards the centre, and fitted as salvagees or nippers, having enough laid up to clove-hitch into the ring bolt; one end is placed on each side the cable, one worked into the lay; the other across, over the first. They are the best sort of stopper, and I never saw them (passed this way) slip on a rope cable. They should have a nettle tail put in when making. Their length must depend on the size of the cable. There are generally three or four on the cable, when stoppering to bring up.

**HATCHWAY STOPPERS.**

When a rope cable, it is fitted as a ring, only larger rope; rove through a hole on each side of the coamings, in the corner of the hatchway, and both tails, made salvagee fashion, are dogged along the cable. I have seen a knot on one end, the other rove through the hatchway, on one side, across the cable, and through the hole in the opposite side, then dogged along the cable, and stopped. When a chain cable, the stopper works from a beam on the lower deck; they are fitted by the dock-yard in various ways.

**HOOK ROPES**

Are used for coiling rope cables in the tiers; a hook and thimble is spliced in one end; they are six or eight fathoms long; the other end whipped.

**GASKETS**

Are made with foxes or small spun-yarn, and plaited, like making sinnet. The spun-yarn is middled over the bolt, and plaited together, the bight forming the eye; sometimes a piece is plaited for the eye, then all worked together; if not, the eye is served over afterwards. Sea gaskets are long enough to have only two on each yard arm, and to furl the sail over booms

and all, when close reefed, as there will be more sail on the yard arms than at any other time. They are secured round the jackstay, by reeving the end through the eye.

#### HARBOUR GASKETS.

In making, the eye is left large enough to take a small thimble, then plaited broader in the centre, and tapered to a small end. The broad part should be long enough to take the sail in, when furled with two reefs. They may be (to look well) about two-and-a-half inches wide, but this is quite a matter of taste. When put on the yard, the thimble is put underneath the jackstay, from forward, and secured to it by a seizing passed round the neck of the gasket and jackstay, close to the thimble, and when the sail is ready for their being passed, it is taken up, and rove through the thimble, and the sail tossed well up, the end then shoved underneath, between the sail and gasket, once or twice. These always look better than any other, are easier passed and secured, and keep the sail well up.

#### SWABS.

Old rope, called junk, is unlaid into yarns. Make a grummet with a good strand, then take some of the yarns of the junk, take the twist or

lay well out, and middle them in the grummet, and continue to fill up (to the size required). Close to the grummet clap a good seizing of spunyarn, and then, if wished, snake it. Sometimes, the handle or grummet is made by splicing both ends together, the splice laying in the head of the swab. In making the grummet, the ends of the strands should not be cut off, but seized in with the rest of the swab.

#### LANIARDS FOR FIRE BUCKETS.

Are best made with sinnet. I have seen small rope, but found after a short time, several were missed, and were most likely, taken for hammock lashings.

#### CLUES, LANIARDS, AND LASHINGS,

Are supplied from the dock-yard, and if drawn as soon as possible, can be blacked and well dried, ready for slinging, when the men shift over from the hulk.

The clues should be all cut the same length before being blacked, and the hammocks always slung to the same length, as it is a great advantage in berthing. If they are cut to sixteen inches; when slung, two inches will be taken up in hitching, and fourteen is quite long enough for any hammock to hang by.

## BOATS' FENDERS

Are sometimes made with matting, and filled with oakum or yarns. They are then sewn up and blacked, a laniard being in one end, which the mat is generally commenced from. They are very hard, and being rough, rub the paint outside very much. Hide, stuffed with oakum, and neatly sewn (shape according to fancy), are much the nicest; they do not rub the paint so much, are lighter, and look better: but a deal depends on taste, as I have seldom seen two ship's boats with fenders alike. I should prefer grummetts, with a laniard spliced round the rope, and not filled up in the centre, particularly for launches; they will be found very useful in steadying the casks when watering. I have seen the men have dry seats, after heavy rain, by putting them on the thwarts to sit on, and as a single piece of rope cannot soak up water enough to do any injury, they need not be kept under cover for that purpose. Being appropriated to the latter use may appear trifling to many, but a long pull, on a wet seat, would, I am convinced, gain me many advocates (after a fair trial) for the grummet fender.

## GUN-TACKLE-FALL BLOCKS.

The fall is generally spliced round the block,

taking in the hook and thimble, and pointed over as far down as the splice. The fall is always worn out before the part forming the strap; and if the blocks are in neat order (which they should be), in case of shifting the fall, they will be rubbed or tarred, as the straps are mostly blacked, and when the blocks are painted, always require to be done over again; and on a neat quarter deck a block of a different shade is an eye-sore to a first lieutenant. Have the straps separate, and when fitted, worm them with small line or spun-yarn, and lace round a neat mat, being well blacked and dry before it is put on the strap. Then seize the block in, and splice the standing part of the fall into the lower part of the strap. I have seen the fall put in with a running eye. Let the blocks be well scraped and oiled; they are very easily kept in order, and if constantly exercised, will not show the marks so much as paint. The straps should be grummetts, as they will lay much snugger than a splice.

All blocks strapped into bolts on the quarter deck for leading ropes, should be covered (if neatness is studied) with a neat matting; no pointing can look so well, and if any doubts exist as to the goodness of the strap, the mat can be taken off, and the strap looked at; and if a new

one is required, the same mat will do again, and it will prevent the constant daubing of the after-guard, and their running along the deck with oakum soaked in blacking, dropping one half as they come along, which takes one or two men a forenoon to scrape out.

#### BREECHINGS

Are differently fitted. The most expeditious way for shifting is to be most admired, and fitted with shackles is decidedly the best. When done so, both ends are pointed, and turned into shackles, with two round seizings, one close to the shackle, the other on the end. The shackle is secured to the side with a bolt. The breeching does not reeve through the cascaval, it snatches.

#### WADS.

Grummets are best for immediate use, or for action; but when guns are loaded, and to remain so for any time, the outside wad should be of the old make. The grummets are in general use now.

#### REEF POINTS

Are made like sinnet, with a double eye. Those for the first are generally four feet, and increase six inches as they go towards the close. The first reef has sometimes single eyes. When

finished to the required length, they are whipped with twine, and crossed between the parts by a needle being put on the twine. The eye is formed in making.

#### ROPE BANDS

Are made the same as a point, with a single eye. They are not so large, and are secured to the head of the sail by being put through the eylet-hole, and then the other end rove through the eye in the rope band, and hauled taut through.

#### ROPE CABLES

Come off in lumps, and should be coiled the same way as when in the tiers. If the lump can be got near the hawse-holes, send the hawse rope out, and clove-hitch it, and seize the end on the cable, point it through the hawse-hole, and haul on the rope; then send out another rope, and timber-hitch the end well out, and walk the cable in; point it into the tier, and clench it. If too rough to have the lump under the bows, get her by the port abreast of the hatchway, and haul the cable in with ropes secured as above. Pass the foremost end forward, ready for clenching.

#### CLENCHING CABLES.

Take the end round the main beam, haul it well through, then secure the end to the anchor

part with the bends. Cross it on the beam, and pass the bends, lay the end along the tier, and secure it to two or three beams with a good lashing, through holes cut for the purpose. Pay down the cable, and lay out for coiling; the best bower with the sun, the small bower against. When one sheave is formed, lay out for the next, on the lowest part, and form another. Cables should be coiled to run from the foremost corner of the hatchway. Cables crossing have a great advantage, as they are much easier broke in for bending.

What do you mean by a sheave?

When as many fakes as possible are coiled round the tier, one inside the other, it is called a sheave.

What is a fake?

One or more of the parts forming the sheave are so called.

*Note.*—The Warspite's cables, I was informed by her second master, were clenched round the beam the same as through the ring, and the clench formed in the hold, and the cable hauled taut through with tackles in the tiers. This prevented any rise, the clench being underneath the deck.

#### ROUNDING CABLES.

Cables should be served in the way of the

hawse, with worn rope, far enough to clear the cutwater and keckling, put on far enough to clear the fore foot and sternpost in swinging.

#### SPLICING ROPE CABLES.

Cut off the ropemaker's end, and unlay the cable sufficiently far for splicing. Take the inside yarns, and lay them up into three strands, equal to the piece of rope intended for the tails, and splice these small strands and tails together. Take the outside yarns, and make them into three-yarn plaits or nettles, then marl the remaining yarns down over the splice and tail, and point over all with the plaits or nettles. The cable is then opened with setting fids and commanders, and the splice made, each strand boused through with jiggers; the ends are put in twice on the tier, and once on the anchor part. Take a good piece of small rope, and pass it as a round seizing, close to the splice, and cross it on all sides. When finished it will look square; and pass another, with smaller stuff, close to the ends. Worm the ends into the lay of the cable, and pass three or four spun-yarn seizings, at equal distances, round them and the cable, to keep them in the lay, snake the seizings, and whip the ends of the tails. The size of the seizing, and number of turns, depend on the size of the cable.

What are bends?

The small rope used as seizings in clenching. The end of the cable for clenching to the anchor should be wormed with good strands, and backed with good spun-yarn, and the end capped. The worming should be long enough to form the clench, and the cable well tarred before and after its being done.

What is the use of worming the end?

The lay of the cable opens in clenching, and being wormed, it prevents the wet getting into the heart of the rope, or lodging.

How will you pass the bends?

Having a piece of rope of the required size and length, I will bring both parts together, leaving one end a third longer than the other, then pass it round both parts of the cable, and put both ends through the bight. The under turns pass with the short end, the upper, or riding turns with the long one; stop both ends well with spun-yarn to their next parts, and cross the whole seizing or bend with sinnet; pass the sinnet on the bight, and secure both together with a reef knot.

#### CAT FALL AND BLOCK.

The block is iron strapped, with a large hook

formed by the strap. I have seen some fitted with a sort of hinge in the back of the hook, which made it much easier to be hooked. The block treble, and three sheaves in the cathead. The standing part of the fall, the end being parcelled in the way of the bolt, is clenched into one on the lower side of the cathead, the hauling part led in on the forecastle from the cathead.

#### BACK ROPE

Is a piece of rope long enough to reach from the cat block to the fore chains, when the cat is overhauled down, allowing a few fathoms in addition.

How is it fitted?

Splice a short piece of rope into one end, making it forked; each end of this fork I will splice into a staple, having thimbles in, driven into each cheek of the cat block, to guide it more steadily for hooking. This is taken forward when hooking the cat.

#### CATHEAD STOPPERS.

When not fitted with the slip or patent stoppers, a good piece of rope, in proportion to the anchor, has an eye spliced in one end, passed over the cathead, and the other end rove through

it, and hauled taut through; it should be well wormed, parcelled, and served, in the way of the catheads, and sufficiently far towards the end to take the ring. The end should have a becket put in and pointed over.

How would you put in the becket?

Take a piece of small rope (three-quarters), and splice it into the inside yarns of the stopper, the same as a tail, or knot the yarns together, then marl down and point over. The becket should be, when made, large enough to take a good hauling line.

What is the use of the becket?

To bend a rope's end to, after reeving the stopper through the ring, to haul the end in board.

#### SHANK PAINTER.

A piece of chain is secured to the side; in the last link a large thimble is put, round this splice the piece of rope intended to make the tail of the shank painter; it is the same sized rope as the cathead stopper; the other end is pointed, with a becket in. The thimble should be parcelled.

#### FISH DAVIT GEAR.

The davit steps into a shoe in the fore chains for the purpose. A double block is seized into

a double strap, leaving an eye to fit the davit head; both parts of the strap marled together. A double block is seized into a double strap, having a large hook and thimble to take the arm of the anchor. Take a large single block, seize it into a single strap, leaving an eye to fit the davit head; it will lay the opposite way to the double one, and allow the hauling part of the fall to lead fore and aft along the gangway.

#### BACK ROPE.

To the back of the hook, clove-hitch and seize the end down of a piece of rope, long enough to lead to the fore-chains, or into the head, when the fish fall is overhauled. This is taken forward when hooking the fish.

#### REAVING FISH FALL.

The standing part of the fall is secured to the lower block, and when rove through both double blocks, the hauling end is rove through the single block from forward aft, outside the backstays, and through a leading block abaft; and when fishing the anchor, the men walk round the deck.

#### LED ACROSS THE FORECASTLE.

The single block should have a double strap, and the fall led through a leading block on the

opposite side of the deck, and along the gangway, and if preferred, into the waist from the break of the forecastle. I should prefer this, as it not only saves the backstays and hammock cloths, but the strength of the men will be nearer the anchor, and will also save time, as they will not have to go over so much deck.

#### GUY BOLTS.

In the fore and after side of the davit, bolts are driven.

#### FORE GUY

Is a piece of stout rope, long enough to reach (leaving room for lashing) from the davit, when stepped, to after side of the cathead. Splice a hook and thimble in one end, in the other splice an eye, into this eye splice a lashing.

#### AFTER GUY

Is another piece of rope, long enough to reach the after part of the fore chains, and fitted the same way.

#### RIGGING DAVIT.

Get a jigger on the foremost swifter, and hoist the davit into the step. Hook the guys to the bolts in the davit head, and set them up to the

cathead and after part of the fore chains; put over the double block,] and then the single, and reeve the fish fall. Take two deck tackles, clap a good strap round the foremast (a couple of butt slings), hook the double block to this strap, and the others to salvagee straps round the davit head. The strap round the foremast should be in a direct line with the davit head when perpendicular. These tackles will answer for topping lifts, and will be found to answer for stowing the anchors. The hauling part should be from the blocks on the mast, and led through leading blocks on deck.

#### DAVIT TOPPING LIFTS.

A piece of rope, having an eye spliced in one end to fit the davit head, in the other a thimble. When rigging the davit, the topping lift goes over first. The fore tackle is lashed to the lower pendant, and the single block hooked to the thimble in the pendant or topping lift, and the fall led through a block on deck. This tackle being so much up and down, always requires another to bring the anchor on the bill-board, and takes a great deal of time to get up, besides having to fit a pendant on purpose. I have seen both tried, and from what I could judge, consider the tackles to the foremast decidedly preferable.

## GETTING READY FOR ANCHORS. (BOWERS).

Overhaul down the cat and fish, lead the cat fall across the forecastle through a leading block, and along the gangway, or into the waist; the fish across the deck, or along the gangway.

The anchors come off in lumps, and should be stowed in them as intended to be hoisted up. Hook the cat to the ring, and the fish to the inside arm. Man the falls, and walk the anchor up; pass the ring stopper and shank painter, and come up the falls, and unhook the cat and fish.

## BELAYING CATHEAD STOPPER.

After being boused well taut with a jigger, take as many turns as the rope will allow, over the timber head in the forecastle bulwark, and seize it well to its own part with spun-yarn.

## SHANK PAINTER

Is set taut, and belayed in the same way.

## SPARE AND SHEET ANCHORS.

A shoe is fitted in the after part of the fore chains. Step a davit in it, set the fore guy up to the fore part of the chains, and the after one through a port to a ring bolt. Get a burton on the main yard, bouse it and the lift well up, brace the yard forward to plumb the place for

the after fluke, and steady up the trusses and braces. Brace the fore yard in to meet the main yard; hook the main stay, overhaul it down, and fore and main yard tackles; reeve their falls through leading blocks on the opposite side of the deck to the anchors. Fore yard secured as the main. Take a pair of good butt slings round the shank close to the stock, and lash it well up, to the stock; clap another pair on the crown, and stop it to the inside arm of the anchor. Hook the fish to the slings on the stock, and to that on the crown, hook the fore and main yard tackles and main stay. The fall of the fish should be led through a leading block on the opposite side of the deck. Man the falls, and get the anchor high enough for placing, then haul on the main stay and fish fall together, and it will bring the anchor into its place for lashing.

I have seen these anchors stowed much easier with two davits and the main stay, one davit stepped between the two after shrouds, the other in the very after part of the chains, a shoe being fitted for the purpose; and in ships where the spare anchors stow well forward, it is by far an easier and better plan. The Britannia's anchors were stowed in this way. The guys of the foremost davit set up; the fore one to the fore part of

the fore chains, the after one through a port to a ring bolt. The after davit; fore guy to an eye bolt in the chains, after guy through a port.

#### SECURING THE SPARE AND SHEET ANCHORS.

A cleat is nailed on the lower part of the stock, and a lashing passed under it, and round the timber head in the after part of the forecastle bulwark for the purpose; another lashing from the same place to the upper arm of the stock, and frap all together. A shore is fitted from the side, which the outside arm rests on, and a lashing passed round the shank through a span-shackle bolt in the side for the purpose; the inside fluke rests on a bill board on the fore end of the chesstree, or after part of the fore chains. Some ships stow their anchors further forward than others.

#### STREAM AND KEDGE

Are stowed in different places, generally in the main chains, and often on the top of spare and sheet anchors. In small vessels I have seen them stowed on the quarter; and, in one or two instances, were found very convenient to get into a boat; the lower blocks of the boat's davit falls being hooked to the ring, they can be

lowered much quicker, than stowed where it will require to get a tackle up on purpose to lower them with. When stowed in the main chains, the topsail halliards will answer, being racked aloft.

#### PUDDENING RINGS.

The size of the rope must depend on the ring. Take several pieces, three times the diameter of the ring, secure them to the centre of the ring with a temporary seizing of spun-yarn; then work the ends round the ring, beginning from the centre. Take a good strand, take two or three turns round the puddening, and put a heaver in the bights, and work it round towards the end; it will heave the puddening taut round; commence from the centre, and heave towards the ends. On each end of the puddening clap a good seizing, and snake it, also one on each quarter. Secure one side at a time; then the other. An iron plate is secured on, over the puddening, when chain cables are worked. But with Captain Elliot's splice, this is unnecessary, as the rope cables shackle, having a thimble put in the splice. It is only necessary to see the two cables bent in a head sea, to point out the advantages of Captain Elliot's splice; and how much easier to shackle it on to a ring, than with

the old clench, which was generally used. Latterly, ships were fitted by the riggers with cables on Captain Elliott's plan; and in working a three-decker cable, which from its size is so difficult to bend, the advantage was very great.

#### BENDING BOWER CABLES.

Clap a tail block or hook a block to a salvagee strap, on the spare anchor stock; through this reeve a rope, and lead the end through the ring, in through the hawse-hole; the other end pass along the gangway. This is called a ring rope. Take two half-hitches, and seize the end in on the cable. Stop the ring rope to the end of the cable; man it, and haul out for bending. When sufficient, hang the cable, with slip ropes, from the bows, and form the clench.

#### CLENCHING CABLES.

When rove through the ring, the end is taken over the tier part, then under, and seized to the part passed over. Three seizings, called bends, are passed; one where both parts come together first, one between that and the end, and one on the end. The clench should be the same size as the ring. When a heavy head sea, this clench can be formed on the forecastle, and then boused taut down to the ring.

## BUOYS

Are generally iron or copper ; the wooden ones being entirely done away with in the navy.

Where should the service be put on the cables?

On the working ones, there should be a half cable and whole cable service.

What is keckling ?

It is worn rope, put round the cable, some distance apart.

In putting on the service or rounding, would you leave the ends out ?

At different places the ends should be left out, and overhand knots made ; it will assist in lightening the cable along, as that part is more difficult to get hold of, and hook ropes are liable to slip.

## SLINGING WOODEN BUOYS.

Take a piece of rope, size according to the buoy, cut off nine times the length of the buoy, and off this piece enough to make two hoops, to go taut round, just above the swell. The remaining rope, cut into four, splice an eye in each end, pull them well out, worm, parcel, and serve. Through the eyes in the ends of the upper slings reeve the piece of rope for the lower hoop, pass it round over the lower slings, and splice both ends together. The piece of rope for the upper

hoop reeve through the eyes in the lower slings, pass it round over the upper slings, and splice both ends together. To the bight lift in the slings, at each end of the buoy, hook the double block of a jigger, the single blocks to ring bolts, or whatever will answer. In the slings at the lower end of the buoy place a thimble; pull the jiggers well out, beating the hoops on at the same time, clap a good round seizing at each end of the buoy, round the slings, crossing it each way; this will form an eye at each end, one with a thimble in. Round the latter splice the buoy rope, into the other a piece of rope long enough to secure the buoy with, when the anchor is up.

#### BUOY ROPE

Is always proportioned to the depth of water; one end is unlaid, and a buoy-rope knot made, it is then laid up again and whipped. A clove-hitch is made, one half of the hitch being on each side of the crown; the end with the knot is seized on the shank; one seizing put on close to the crown, one close to the knot, and one on the end. The other is bent to the buoy.

How much of the end is unlaid before making the knot.

Three or four feet is sufficient.

## REEVING RUNNING RIGGING.

## FLYING JIB HALLIARDS

Are single ; are spliced into the head of the jib, and reeve through the block at the fore top-gallant mast-head, through lubber's hole, and through a fair leading sheave or block on deck. When the sail is not bent, it is hitched to the hook on the traveller.

## FLYING JIB STAY

Has an eye spliced in one end, which goes over the hook on the traveller, when put through the hanks for the jib, and sets up in the top with a gun-tackle purchase ; the lower block strapped round the eye of a shroud ; the upper one turned into the end of the stay. When set up, the fall should be racked. When neatness is studied, the stay is rove through a block, or (in small ships) a thimble strapped round the shroud, and pulled up, when required, with a jigger, then racked to the mast-head part, and the jigger taken off.

## FLYING JIB OUTHAUL

Is spliced into the shackle on the traveller, rove through the sheave in the boom end, and in on the forecastle. I have also seen it rove through the dolphin striker.

## FLYING JIB DOWNHAUL.

When the sail is bent, it is spliced into the head, rove through the hanks, and through a small block seized on the traveller, and in on the forecastle, through a fair leader in the bulwarks; sometimes through thimbles on the luff of the jib, instead of through the hanks.

## FLYING JIB SHEETS

Are single. A piece of rope, of the required length, is middled, rove through the clue of the sail (when bent), then crossed, and a throat seizing passed; the ends rove through the fair leaders on each side of the forecastle bulwarks. The sheet is often middled, and an eye made in the centre, by crossing both parts, and a throat seizing passed as above, and seized to the clue of the jib. This is by far the best way, and in general use. I only saw the former in two instances. When the sail is unbent, they can be stopped to the fore topgallant stay, and hauled taut in. If fitted with a spritsail yard, through thimbles fitted round it, with a double strap, and led over the jib guys.

## JIB HALLIARDS.

When double, one end is clenched round the fore topmast-head, on the same side, and close to the jibstay, rove through a single block, seized

into a single strap, leaving room for a lashing to secure it to the head of the jib, up again to the mast-head, and down through the sheave in the upper block, on the opposite side to the jib stay, through lubber's hole and through a leading block amidships on deck. When rove through cheeks over the crosstrees, the hoisting part is sent down abaft all; the standing part clenched round the mast-head.

#### JIB HALLIARDS WITH A WHIP.

A piece of rope, nearly equal to the double halliards, is rove through the block at the mast-head, on the opposite side to the jib stay, and lashed to the head of the jib, an eye being spliced in the end; in the other, a single block is spliced, high enough from the deck to allow the jib being hauled close down. Through this block, reeve a fall, and send both ends down through lubber's hole. Splice one end into a bolt, reeve the other through a leading block. Objections have been made to whips, but if the standing part is put a good distance from the hauling, it is impossible it can take turns in.

#### BLOCK TO THE HEAD OF THE SAIL WHEN DOUBLE HALLIARDS.

Can be seized into a strap, long enough to allow the eye below the block to be put through

the eye formed by the bolt rope at the head of the jib, and a toggle put in, a small nettle laniard being put through the end of it, and secured to the strap of the block, to prevent its falling overboard when taken out to shift the jib.

#### JIB SHEETS DOUBLE.

Two single blocks are seized into one strap as span blocks, and the strap secured to the clue of the sail, with a lashing passed through it, and an eye formed in the strap by crossing both parts together, and passing a throat seizing. One end of the sheet is clenched (or spliced) into an eye bolt in the bulwarks, the other end rove through the block in the sail, from out in, and through a fair leader or sheave in the bulwarks.

#### WITH PENDANTS.

A piece of rope of sufficient size and length is middled, crossed, and a throat seizing passed round both parts, leaving an eye in the bight, large enough to take a lashing. In each of these pendants, splice a single block; reeve a whip, the same as in the double sheets. The pendants should be long enough to allow the weather one to hang slack on the fore topmast stay, when the sheet is aft.

## OUTHHAUL

Is spliced into the shackle on the traveller, reeves through the sheave in the boom end, and has a block (single) turned into the end. I have seen this block spliced in, and also seized into a Flemish eye. A whip is rove, one end spliced into an eye bolt in the bulwarks; the other led through a fair leader or sheave, close to it.

## DOWNHAUL.

When the sail is bent, it is spliced into the head, then through the hanks, and through a single block on the traveller, and through a sheave in the bulwarks. Thimbles are often fitted to the luff of the jib for the downhaul, instead of being rove through the hanks.

## FORE TOPMAST STAYSAIL HALLIARDS

Are single, and rove through the block under the jib stay, spliced into the head of the sail, the other end through lubber's hole, and through a leading block on deck.

## FORE TOPMAST STAYSAIL SHEETS

Are fitted and rove the same as the jib sheets.

## DOWNHAUL

Is spliced into the head of the sail, and rove

through a single block, seized into a single strap, leaving room for a seizing to be passed to secure the block on the spring stay, close to the bees. I have seen a bolt driven in the bees for the purpose, which is preferable.

#### GEAR OF FORE YARD.

Fore clue garnets. The standing part is secured round the yard, close outside the quarter blocks, with a timber-hitch or clench, rove through the clue block, up again through the sheave in the quarter block, and through a leading block on deck.

#### BLOCK FOR THE CLUE OF THE SAIL

Is single, seized into a single strap, having an eye spliced in each end; it is served over with spun-yarn, and is secured to the sail by a lashing passed through the eyes on the fore side. I have seen this strap long enough to go round the clue, and both eyes seized together on the after side; they should have a seizing passed through the clue to prevent their slipping up.

#### BUNTLINES (FORE).

Generally toggle to the foot of the sail, and are sometimes clenched; rove through a double block under the fore part, and through another

under the after part of the fore top, through fair leading sheaves in the racks to the bulwarks.

How many double blocks are there on each side, and how are they fitted?

Two. They are seized into single straps well parcelled and served, and put through a hole in the top, and toggled on the upper side, the sheaves standing fore and aft. The buntlines are sometimes rove as follows:—Reeve the buntline first through the large sheave in a fiddle block; reeve both ends through the after double block, from aft forward, then through the foremost double block, and over the toggles, or through the holes in the foot of the sail. The fiddle block should be nearly close up to the top. Through the other sheave in the fiddle block reeve a fall, splice one end into a bolt in the bulwarks, and reeve the other through a sheave in a rack. The buntline should be long enough to allow the sail to belly. The outside leg of the buntline is sometimes rove through a thimble strapped into the foot of the sail, and reached into a cringle put into the bolt rope. This brings the clue above the clue.

What advantage is there in this method of buntlines?

It brings the clue into the middle of the sail, and keeps the buntlines from being parted.

## YARD TACKLE TRICEING LINES.

If no check on the yard, take the pendants taut along from the yard arm, and there secure a single tail block. On the foremost shroud, well up, seize another single block, fitted with a single strap, leaving room, when seized in, for the seizing with which it is secured on the shroud. Round the fiddle block in the pendant, between both sheaves, secure the triceing line, with a running eye; then reeve the other end through the cheek or tail block, and then through the single block on the shroud and on deck.

## LOWER BLOCK FOR YARD TACKLES

Is a single block, strapped, with a hook and thimble, a becket put in the upper end of the strap; to this becket, clench or bend the end of the fall, and reeve it through the lower sheave in the fiddle block in the pendant, then through the lower block, and through the upper sheave in the fiddle block, and when used, should be rove through a leading block on deck.

## TRICEING LINE TO LOWER BLOCK.

Seize a single block close to that on the shroud, or a double one will do. Then, reeve the triceing line,

## OUTHHAUL

Is spliced into the shackle on the traveller, reeves through the sheave in the boom end, and has a block (single) turned into the end. I have seen this block spliced in, and also seized into a Flemish eye. A whip is rove, one end spliced into an eye bolt in the bulwarks; the other led through a fair leader or sheave, close to it.

## DOWNHAUL.

When the sail is bent, it is spliced into the head, then through the hanks, and through a single block on the traveller, and through a sheave in the bulwarks. Thimbles are often fitted to the luff of the jib for the downhaul, instead of being rove through the hanks.

## FORE TOPMAST STAYSAIL HALLIARDS

Are single, and rove through the block under the jib stay, spliced into the head of the sail, the other end through lubber's hole, and through a leading block on deck.

## FORE TOPMAST STAYSAIL SHEETS

Are fitted and rove the same as the jib sheets.

## DOWNHAUL

Is spliced into the head of the sail, and rove

through a single block, seized into a single strap, leaving room for a seizing to be passed to secure the block on the spring stay, close to the bees. I have seen a bolt driven in the bees for the purpose, which is preferable.

#### GEAR OF FORE YARD.

Fore clue garnets. The standing part is secured round the yard, close outside the quarter blocks, with a timber-hitch or clench, rove through the clue block, up again through the sheave in the quarter block, and through a leading block on deck.

#### BLOCK FOR THE CLUE OF THE SAIL.

Is single, seized into a single strap, having an eye spliced in each end; it is served over with spun-yarn, and is secured to the sail by a lashing passed through the eyes on the fore side. I have seen this strap long enough to go round the clue, and both eyes seized together on the after side; they should have a seizing passed through the clue to prevent their slipping up.

#### BUNTLINE (FORE).

Generally toggle to the foot of the sail, and are sometimes clenched; rove through a double block under the fore part, and through another

under the after part of the fore top, through fair leading sheaves in the racks to the bulwarks.

How many double blocks are there on each side, and how are they fitted ?

Two. They are seized into single straps well parcelled and served, and put through a hole in the top, and toggled on the upper side, the sheaves standing fore and aft. The buntlines are sometimes rove as follows :—Reeve the buntline first through the large sheave in a fiddle block ; reeve both ends through the after double block, from aft forward, then through the foremost double block, and over the toggles, or through the holes in the foot of the sail. The fiddle block should be nearly close up to the top. Through the other sheave in the fiddle block reeve a fall, splice one end into a bolt in the bulwarks, and reeve the other through a sheave in a rack. The buntline should be long enough to allow the sail to belly. The outside leg of the buntline is sometimes rove through a thimble strapped into the foot of the sail, and clenched into a cringle put into the bolt rope, a few feet above the clue. This brings the clue well up for furling.

What is the advantage of having the buntlines rove as above ?

It brings only one instead of two of the hauling parts on deck.

## YARD TACKLE TRICEING LINES.

If no check on the yard, take the pendants taut along from the yard arm, and there secure a single tail block. On the foremost shroud, well up, seize another single block, fitted with a single strap, leaving room, when seized in, for the seizing with which it is secured on the shroud. Round the fiddle block in the pendant, between both sheaves, secure the triceing line, with a running eye; then reeve the other end through the cheek or tail block, and then through the single block on the shroud and on deck.

## LOWER BLOCK FOR YARD TACKLES

Is a single block, strapped, with a hook and thimble, a becket put in the upper end of the strap; to this becket, clench or bend the end of the fall, and reeve it through the lower sheave in the fiddle block in the pendant, then through the lower block, and through the upper sheave in the fiddle block, and when used, should be rove through a leading block on deck.

## TRICEING LINE TO LOWER BLOCK.

Seize another single block close to that on the foremost shroud, or a double one will do for both. Through this, reeve the triceing line,

and when required to trice up, hitch it round the strap above the thimble, and half-hitch the fall round the hook, and trice up altogether. The fall can be coiled inside, on the futtock shrouds. I have seen this latter triceing line block fitted in the slings, and secured to the strap of the jeer block, but well up on the shroud is better, and the tackle overhauled before triceing up, to reach the deck. When at sea, the lower triceing line and fall should be quite slack enough to allow the yards bracing up.

#### LEACHLINES.

There are two on each yard arm. Divide the yard into three, commencing from the yard arm inside the rigging. At one-third secure a tail block, on the fore side, and another at two-thirds. Fit a double block, the same as for the triceing line, on the foremost shroud above it, through this double block reeve the leachlines, then through the blocks on the yard. Until bent to the sail, make an overhand knot on the end of each, and round them, close up; the hauling parts are rove through leading blocks on deck.

#### SLABLINES,

Are fitted the same way. On the after side of the yard. Leachlines and slablines are (in

small vessels) often in one; thimbles are put into cringles in the leach of the sails. The end clenched round the jackstay rove from forward aft, through the thimble, and through a block on the after part of the yard as slablines. This is a very bad way, as the thimbles are continually turning out.

#### BUNT SLABLINES.

A single block is secured in the slings of the yard, a piece of rope rove through it, and the end to be bent to the sail, forked, by splicing a short piece of rope into it of the same size; the forked end is clenched into holes in the foot of the sail; the other end pulled up on deck.

#### TACKS AND SHEETS.

A single block is seized into a single strap, leaving an eye to fit the bumpkin; this block is made with a shoulder, which lays on the bumpkin when the block is on.

#### BUMPKIN BRACES

Are now generally chain; one hooks to the bow, and one to the cutwater, and set up with a laniard rove through span shackles in their end, and others on the bumpkin.

## REEVING THE TACK.

Clench the large end round the bumpkin, outside the block, having been well wormed, parcelled, and served, and far enough towards the small end to take the block on the bumpkin when the sail is reefed. Reeve the small end through the block in the sail, then through that on the bumpkin, and in on the forecastle through a sheave in the bulwarks.

## FORE SHEET.

The large end is served the same as the tack, and is clenched into a bolt in the side for the purpose, well parcelled; the small end is rove through the block in the sail, and through a sheave in the side, or gangway bulwarks. Large ships generally work the fore sheet in the waist, but it is often worked on the gangway.

## FORE SHEET BLOCK

Is sometimes seized into a single strap, put over the clue, and then the block seized in. I have seen them fitted as follows, they looked neat, and were better and closer secured on the sail:—

Take the block and secure it on a stool or plank, by putting a bolt through the swallow, and a hole in whatever it rests on. Make two

more holes, at the required length for the strap from the block, and put a bolt in each; take some good six or eight-yarn spun-yarn, and commence from one of the bolts, and pass round the score of the block and the bolts, until sufficient turns are passed to make the strap strong enough. Then hitch all over close, and point with spun-yarn. The two bolts will form the eyes, which should be hitched and also pointed over, and when finished, the block seized in with a round seizing. The pointing should finish where the seizing is passed. This block is secured round the clue with a lashing passed through the eyes.

#### FORE BOWLINES

Have an eye in one end to go over the toggle, and is rove through a single block, seized into a single strap, and secured to the forestay collar with a seizing passed through an eye left in the strap, and the other end led in on the forecastle.

#### FORE TOPSAIL GEAR.

Topsail cluelines are fitted the same as clue garnets, and sometimes with a whip; they come on deck through lubber's hole.

#### WITH A WHIP.

A piece of rope, nearly equal to the double

clueline, is rove through the quarter block, and an eye spliced in one end, which is secured with a seizing round the clue, when the sail is bent. In the other end splice a single block, and reeve a fall through it; one end splice into a bolt in the deck, the other reeve through a leading block, well apart from the standing part. The disadvantage of double cluelines is, the points getting in the clue blocks when clueing up, or a sheeting home; I saw a topsail split by it. If they are preferred, a truck should be put on the cluelines, when reeving, before going through the clue block. I have heard them also called bull's-eyes; they are round balls of wood, with holes in them, large enough to take the cluelines.

#### BUNTLINES

Are toggled to the foot of the sails, and rove through single blocks at the mast-head, underneath the rigging, through lubber's hole on deck. Sheaves cut in the foremost end of the trussel-trees are best, as they keep the buntlines clear of the belly of the sails. Blocks into bolts will do equally well, but do not look so neat.

#### BUNTLINE SPANS

Are short pieces of rope, with a thimble in

one end, the other end whipped; the buntlines are rove through these thimbles before being bent to the sail, or rove at the mast-head. At sea, these spans are knotted together, abaft the tye blocks on the yard, and stopped to them. When in harbour, they are let go, to allow the sails being hoisted well up to furl, or hauled out to dry.

#### FORETOP BOWLINES

Have an eye spliced in one end, to go over the toggle on the bridle; the other is rove through a block at the bowsprit cap, strapped into a bolt, or a sheave cut in the after end of the bees, and pulled up on the forecastle. French ships carry their bowlines to the jib boom end, but it is quite far enough to the bees, as it is not of much use, except in staying, as the fore top-sail will always stand a point higher than the main. Colliers never carry a foretop bowline, and there are not better seamen any where. When not bent to the sail, they are stopped to the tye blocks on the yard, and close down by cap shores.

#### REEF TACKLE

Is sometimes double, and also fitted with a whip, as cluelines.

## WHEN DOUBLE,

A single block is seized into a single strap, having a thimble in it, and the seizing passed between the block and thimble. This block goes on a bridle, or span, in the leach of the topsails. One end of the reef tackle is clenched round the neck of the boom iron, the other rove through the block, up through the sheave in the yard arm, and through the upper sheave in the sister block, through lubber's hole, and through a leading block or sheave on deck.

## WHEN SINGLE,

An eye is spliced in the end of the pendant, to go over a toggle, fitted to a bridle, as above; the other end rove through the yard and sister block, has a single block spliced into the end, and a whip rove, as on the clueline.

## GEAR OF MAIN YARD,

Buntlines.—Two on each quarter, and reeve on the bights. Reeve first through the large sheave in a fiddle block, then reeve both ends, from forward, through the double block under the fore part of the main top, and bend or clench both ends to the holes in the foot of the sail for the purpose. Sometimes toggles are fitted into the holes, with double straps, and an eye

spliced into each end of the buntlines. If no fiddle blocks to be got, seize two single ones into one strap. Through the other sheave of fiddle reeve a fall, clench one end to the mainstay by the foremast, or splice an eye and seize it round it. The other end reeve through a leading block, seized into a single strap, leaving an eye to seize it to the stay, or through a sheave or leading block in the fore bitts.

**SLABLINES AND LEACHLINES.**

The same as on the fore yard.

**BUNTLINES (SLAB).**

The same as the fore yard.

**MAIN TACK BLOCK.**

Fitted the same as the fore.

**MAIN TACK**

Is rove through the block, and the large end clenched into a bolt, well parcelled, in the chess-tree, for the purpose; the small end through a block or chock, fitted for the purpose, in the chesstree, abaft the bolt.

**MAIN SHEET BLOCK IN THE SAIL,**

Is fitted and secured the same as the fore.

**MAIN SHEET LEADING BLOCK**

Is a large single block, seized into a single strap; then the strap put through an iron outrigger in the side, and lashed through the bight to a bolt in the side, abaft the outrigger. The strap should be parcelled under the seizing, and also a piece marled over; the bight of the strap should be parcelled, in the way of the lashing. I have seen this strap differently fitted, with double and single straps; also parcelled and served, and the contrary, but generally the latter. I conceive they come under the head of "furniture blocks," and should be fitted accordingly.

**MAIN SHEET**

Is clenched to a bolt in the side, rove through the block in the sail, through the block in the outrigger, from out in, through a port in on the main deck, or through a quarter-deck port. The main deck, in all large ships, is best, as it brings the purchase more up and down, and sets the sail better, by tautening the after leach.

**MAIN BOWLINE**

Is a runner and tackle, and is rove and unrove as required. It is rove through the thimble seized on the bowline bridle, the end of the runner

secured round the fore bitts or a cleat, the lower block of the gun-tackle purchase fitted with a hook, and hooked to a strap close to the end of the runner for the purpose. I have seen the main bowline boused up to the weather forecastle bulwarks, which I think preferable, not seeing any very great advantage from its being hauled amidships; particularly when it is considered that the main topsail yard is braced, on a wind, abaft the main yard.

#### MAIN TOPSAIL GEAR.

Cluelines, buntlines, reef tackles; the same as the fore.

#### MAIN TOP BOWLINES

Are fitted and bent the same as the fore. They are rove through two single blocks, one on each side, secured with a lashing round the foremast-head over the rigging, close down, the lashing rove through the eye left outside the seizing of the strap, and lay on the after quarter of the mast-head; from the blocks they lead through the after part of lubber's hole on deck through leading blocks; these blocks are sometimes seized to the eyes of the shrouds for the bowlines, instead of round the mast-head. I prefer the former.

## MIZZEN TOPSAIL GEAR.

Cluelines the same as the main topsail.

## REEF TACKLES,

Generally single from the sail, and fitted with toggles, or spliced into the cringle, are pulled up on deck with a whip.

## MIZZEN TOPSAIL BUNTLINE.

Only one: rove through a block or sheave, the same as the fore or main; a piece of rope being spliced into the bending end, making it forked, both ends of which are secured to the sail, the same as with two buntlines.

## BOWLINE

Is toggled to the bridle, the same as the main, and leads through the sheave in the double block with crossjack brace, and on deck through a sheave in the bitts or leading block.

## GEAR OF TOPGALLANT YARDS AND SAILS.

Yard ropes are rove through the sheave in the hounds of the topgallant mast. The after end through lubber's hole, through a leading block on deck. The other overhauled down before the top, and bent round the slings of the yard, with a round turn and timber-hitch. I have seen

the yard rope bent into a strap with a thimble in the slings; but being secured round the yard answers better, and allows the topgallant sail to go closer up, with all the reefs out of the topsail.

The lizard is hauled out and hitched round the yard rope. The grummet is put over the yard arm, and the yard rope manned.

The lifts and braces are overhauled ready for rigging the yard. The upper lift and brace to the topmast crosstrees; the lower, to the topsail yard.

How would you hitch the lizard?

After being hauled taut out, I will take a half-hitch with the bight, and bring the end into the slings, so that when hauled on, the hitch will render, and allow the yards to fall across.

#### TOPGALLANT BRACES.

Fore.—If double, the standing part is clove-hitched round the first and second shrouds of the main topmast rigging, through the block for the brace, through another single tail block, secured to the first and second shrouds (the same as, and under, the standing part) through lubber's hole, and through a fair leading sheave on deck.

They are often led forward from the blocks in the topmast rigging, through a leading block, strapped round the eyes of the fore rigging or

after part of the top, through fair leading sheaves on the forecastle. I prefer them abaft.

How is the block in the topmast rigging fitted?

A single piece of rope is spliced round a single block, leaving a tail about three or four feet long, clove-hitch this sail round the first shroud, then round the second, and seize the end. I have seen a round turn taken round the first, and a clove-hitch round the second; either will do. If neatness is studied, clove-hitch round the second and third, this will bring the block under the rigging, and out of sight. If rove single, the block is secured the same way, an eye made in the end of the brace to fit the yard arm; the other end rove through the block and on deck, as before. A whip is sometimes put on the brace, the block spliced in, close up to the catarpins, which answers very well. One end of the whip is spliced into a bolt on deck, the other through a fair leading sheave or block.

#### MAIN TOPGALLANT BRACES

Are fitted the same as the fore, with the exception of leading. The standing part is secured the same way to the foremost, or second and third shrouds of mizzen topmast rigging, the hauling part before all, through lubber's hole, through a sheave in the rack, or a leading block, to the side abreast of the mizzen mast.

**MIZZEN TOPGALLANT BRACES**

Are single. An eye is spliced in one end to fit the yard arm. The other end is rove through a single block, seized into a single strap, and secured to an eye bolt on each side the main cap, through lubber's hole on deck. I have seen these braces through blocks in main topmast rigging, in harbour, where appearance has been much studied.

**CROSSING TOPGALLANT YARDS.**

One man stands on the topmast cap, two on the crosstrees (one on each side), one of the latter shoves off the grummet, and rigs the upper yard arm; the man on the opposite side bears off, one man stands in the topmast rigging to put on the lower lift and brace, another stands on the top-sail yard ready to bear off. The lower lift well manned in the top.

When the order "sway out of the chains," is given, the man standing on the fore part of the top bears the yard rope off to clear the yard arm of the top. When clear, "sway away." When the yard arm is clear of the crosstrees, the grummet is shoved off, the upper lift and brace is put on, and the order, "sway higher," is given, the lower lift and brace is put on, and the lift hauled well taut. The man on the cap

has the parral lashing in his hand, ready for passing; he reeves a turn, and on the order "cross away," he hauls on the lizard. The lower lift is boused on, and the yard falls across, the braces are hauled taut, and the yard squared. When a ship is going to sea, the lifts and braces are stopped to the jackstay, and the topgallant yard ropes toggled for halliards, or half-hitched over the upper block.

How would you toggle the halliards, or half-hitch them?

To toggle the halliards, strap two single blocks with single straps, leaving an eye below the seizing, in one, to take a small lashing; in the other, to take the bight of the topgallant yard rope. Lash the block with the small eye to the eye of a lower shroud, and reeve the yard rope through it. To the strap of the other block secure the toggle with a nettle laniard.

#### TO REEVE THE PURCHASE,

Take a round turn with the yard rope, well up, round the strap of the block with the long eye, and reeve the bight through the eye, and put the toggle in it; then bring the end up from the block seized to the eye of the shroud, and reeve it through the one on the yard rope, and send the end on deck, and reeve it through a leading block.

## WHEN HALF-HITCHED,

The lower block is fitted as described, and secured ; the upper one is strapped, with a thimble in the strap ; reeve the yard rope through the thimble, and then through the lower block.\*

## TO REEVE THE PURCHASE,

Take the block with the thimble in, well up the yard rope, and take a half-hitch round the strap over the block, reeve the end through the lower block, then bring it up, and reeve it through the block on the yard rope, and send the end on deck, as before.

I have seen these halliards sent down through the after part of lubber's hole, which caused them to lead across the sheave in the hounds of the mast, and to prevent which, I would always send them down between the trusseltrees.

## TOPGALLANT SHEETS

Are rove through the sheave or cheek in the topsail yard, then through the after sheave in the double block in the quarter of the topsail yard, and through a leading sheave or block on deck. The upper end is bent to the clue of the

\* The advantage of having the upper block fitted with a thimble is, it is always on the yard rope ; when toggled, it is not.

topgallant sail; sometimes a long eye is spliced, which goes over a toggle in the clue of the sail.

#### TOPGALLANT CLUELINES

Are bent through the clue of the sail, and secured with a sheet bend, it is then rove through the foremost sheave in the quarter block on the yard, and sent down through lubber's hole on deck.

#### TOPGALLANT BOWLINES

Are toggled to the bridle on the sail. The fore one is rove through a single block at the jib boom end, one on each side, and in on fore-castle, through fair leaders.

How are they strapped?

Like span blocks, and lash together on the upper side with two lashing eyes; they are sometimes strapped singly, and go over the boom end.

#### MAIN

Are toggled to the bridle, rove through sheaves cut in the after part of the fore topmast trussel-trees, and through lubber's hole, through fair leading sheaves on deck. Single tail blocks are sometimes used, clove-hitched round the after shroud in the fore topmast rigging, close up to the futtock stave.

## MIZZEN

Are toggled to the bridle, and rove through single blocks on each side of the mainmast-head, and through fair leading sheaves on deck. A double block is often used instead of two single ones on each side, one for the brace, the other for the bowline. They should be sent from lubber's hole abaft all, between the catarpin legs.

The principal object in reeving running rigging, is to avoid ropes being too crowded in one place, crossing or chafing each other, or any part of the standing rigging, as it not only destroys it, but takes away from the purchase.

## TOPGALLANT BUNTLINES

Are seldom used, although very necessary, and in taking the sails in, when blowing fresh, save much time, and, in some instances, a man's life. On a wind, it spills the sail, and prevents its getting over the lee yard arm ; and going free, enables the men to furl it much easier.

Merchant ships, who reeve as little rope as possible, and are generally weak handed, have their sails fitted with buntlines, which is a strong proof of their utility.

How are they fitted ?

A piece of rope, with a thimble on it, is spliced into two eyelet holes, worked in the foot of the

sail, about a third from each clue. Round the thimble splice the end of the buntline, reeve the other end through a single block, seized into a single strap, and secured round the topgallant mast-head, by a lashing passed over all. Fitted in this manner, the blocks can be taken off in harbour. The buntline is sent on deck through lubber's hole, before all.

#### ROYAL YARDS,

When crossed, as topgallant yards, are rigged the same, with the exception of the quarter blocks, which are single. In small ships they have no jackstay, the sail being laced to the yard. Topgallant sails are often bent the same way, but jackstays keep the sail much better up on the yards.

#### ROYAL BRACES.

Fore.—Two blocks, fitted in one strap as span blocks, are lashed round the main topgallant mast-head, the blocks standing on the foremost quarter on each side. Between the after part of the fore topmast trusseltrees, a piece of wood, with two sheaves the same size, and a large one in the centre, is secured. The fore royal braces are single, an eye is spliced in one end to fit the royal yard arm; the other end rove through the span block, and back again through the sheaves in

the fore topmast trusseltrees, and into the fore top. The blocks are often strapped separately, and seized into the strap with a round seizing, leaving room for a seizing being passed through the strap and round the eye of the topgallant stay, before going on the funnel, one on each side. This will not look so neat as span blocks, not being so easily taken off and put on. The blocks for royal braces are often seized on the topgallant stay, with the idea of clearing the foot of the main royal, but it is of no use.

#### MAIN ROYAL

Are fitted the same as the fore, and lead through single blocks, the same as the fore, on mizzen topgallant mast-head, and back into the main top, or through lubber's hole in the mizzen top on deck. The latter is decidedly the best way, as they can be much better attended to when under the eye of the officer of the watch, than when left to the topmen.

#### MIZZEN ROYAL

Are fitted the same as the others, and lead through sheaves in the after ends of the main topmast crosstrees, and into the top.

#### CROSSING ROYAL YARDS.

They are crossed the same way as the top-

sail, about a third from each clue. Round the thimble splice the end of the buntline, reeve the other end through a single block, seized into a single strap, and secured round the topgallant mast-head, by a lashing passed over all. Fitted in this manner, the blocks can be taken off in harbour. The buntline is sent on deck through lubber's hole, before all.

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#### CROSSING ROYAL YARDS.

They are crossed the same way as the top-

gallant yards. When they are rigged aloft the topgallant masts should be fitted with jacks for the men to stand on, not only for expediting the crossing, but for the safety of the men.

How are jacks fitted ?

They are made of iron. The topgallant mast immediately over the hounds, the breadth of the jack, is made square to fit, it goes on first, and the funnel next (if used). The horns, one on each side, are of a proportioned length to the mast, an eye is turned in the end of each horn for the royal rigging to reeve through, and set up as before. When no royal rigging, the breast backstay should be rove through the eye, and set up in the chains with a gun-tackle purchase. Royal rigging is quite unnecessary.

#### ROYAL YARDS, &c.

In small ships, royal yards should not be rigged aloft.

#### ROYAL YARD ROPES

Reeve through the sheave in the hounds of the royal masts, and should be long enough to have a purchase put on, the same as topgallant yard ropes, when used as halliards.

#### WHEN SET FLYING,

A span is made by splicing an eye in each end

of a piece of rope (having a thimble on it) to fit the yard arms; the span should be a little longer than the distance between the rigging cleats: round the thimble a piece of rope is spliced, long enough to reach from the yard, when across, on deck. This is called a tripping line.

How would you form the purchase for royal halliards?

Take two single blocks, strap one with a hook and thimble, the other with a thimble only. Reeve the royal halliards through the thimble; and then through the sheave in the block fitted with the hook and thimble; take a half-hitch with the halliards over the block with the thimble only, then reeve the end through both blocks, hook the lower block, and you will then pull the sail up with a gun-tackle purchase.

#### FITTED WITH A TOGGLE.

One block is fitted with a hook and thimble; the other is strapped, with an eye large enough to put the bight through and toggle. The latter should always be secured to the strap with a laniard. Either way will answer.

#### BRACES TO FLYING ROYALS.

Beckets can be pointed on to each yard arm, on the after side of the yard. The braces have

a toggle spliced into each end. The royal is stopped up on deck, or in the top; when the yard is high enough, the braces, sheets, and bowlines toggled, and the sheets hauled home, the sail hoisted. When sent down, the braces, sheets, and bowlines are untoggled, the tripping line hauled on, and the sail will be easily got on deck.

How do the halliards lead?

An iron traveller to fit the royal masts, to run easily up and down, is put over when rigging the mast. An eye is formed, when making, on the traveller, large enough to take the royal halliards or yard rope, after being rove through the sheave in the royal pole. They are rove through the eye on the traveller, and the after end sent on deck through the after lower trusseltrees or lubber's hole. When royal backstays or rigging are used, they should always come down amidships, but they are often, when none, sent down to windward, and have to be shifted in stays.

How do the bowlines lead?

Fore.—They reeve through thimbles, at the flying jib boom end, and in on the forecastle.

Main.—Through two thimbles strapped round the fore topgallant mast-head, and into the top.

Mizzen.—Through two sheaves in the after part of the main topmast trusseltrees, and into the top.

## ROYAL SHEETS.

Are either toggled or bent to the clues, rove through sheaves in the yard arms, and through the after sheave in quarter block on the topgallant yard, and through leading thimbles on the topmast rigging, and into the top.

When topgallant and royal yards are on deck, what would you do with the gear?

The topgallant sheets are stopped to the topmast-head, and hauled taut on deck. I have seen them, in harbour, stopped to the tye block close down to the yard. The former is decidedly the best, as they are always ready for bending. The clue-lines and bowlines are also stopped at the mast-head.

## LIFTS AND BRACES

Are taken outside the topgallant rigging, and the eyes stopped to the rigging, at the topmast-head, before all, and hauled taut on deck.

## ROYAL GEAR

Is stopped at the topgallant mast-heads, and hauled taut on deck.

## TRIPPING AND CHECKING LINES.

Splice a long strap into the eye bolt in each yard arm of topgallant and royal yards, and when

rigging them for crossing, put the lift and brace over the becket or straps.

#### TRIPPING LINES.

When the yards are to be sent down, a rope is bent to this becket, and led forward on the gangway, forecastle, or quarter deck, according to the yard coming down. When this is hauled on, it trips the yard, and unrigs the lower yard arm; lowering, unrigging the upper one.

#### CHECKING LINES

Are rove through thimbles at the eyes of the topmast and topgallant rigging; one end bent to the lift and brace, the other into the top. They are used to haul them into the mast-head, instead of sending men aloft.

When these are used, the parral lashing is never passed on the fore and main topgallant yards, the braces keeping them in their places. The parral of the mizzen topgallant yard being generally stopped so as it will break when hauled on.

This is a bad plan, and ought only to be used in guardships, where they are anxious to keep their rattlines square, as I have seen men, when sending the yards down with the sails bent, when checking lines are seldom or ever used, quite slack and awkward.

## STAYSAIL GEAR.

## STORM STAYSAILS :—FORE.

Has often a stay fitted for the purpose, and I have also seen the fore runner and tackle used. The stay being fitted, is by far the best.

How would you fit the stay ?

Take a good piece of rope, of proportionable size to the sail, fit one end with two legs as a stay, and lash them abaft the foremast-head ; the legs being placed underneath those of the standing stay. Take a piece of rope, the round of the bowsprit, inside the forestay collar, splice an eye in each end, and seize a thimble in the third. Splice a lashing in one eye, and secure the strap round the bowsprit, by passing it through both eyes, until sufficient turns are taken to secure it. Reeve the end of this stay through the hanks for the sail, reeve it then through the thimble in the strap, and set it well up, with a luff, the double block hooked to a strap well up the stay, the single one to another on the end, then pass a round seizing round both parts, close to the thimble, come up the luff, and pass another between it and the end, but not at too great a distance, as it will prevent the sail coming close down.

## HALLIARDS.

Have a good strap to go round the foremast-head, close to the stay. It can be fitted with

two lashing eyes, which will cause the strap to be easily taken off and put on. To this, when the sail is to be set, hook the double block of a luff tackle; the single to the head of the sail; reeve the fall through a leading block on deck, being sent down abaft the fore yard.

#### WITH RUNNER AND TACKLE.

Hook a large single block to a strap round the mast-head, or lash the runner block. Through this block reeve the runner, and round the block close up, reeve the runner through the hanks, and take a round turn round the bowsprit with the runner, and seize the end to the standing part; hook the lower block to a ring bolt, and set the runner well up. Both parts close to the block from the mast-head, rack together with spun-yarn, and pass a seizing over the upper purchase block, and round both parts of the runner.

When the sail is to be set, hook the lower purchase block to the head of it, which makes the stay and halliards in one.

The fall reeve through a leading block, being sent down abaft the fore yard.

Should the stay stretch or slack, cast off the racking, and pull up on the halliards. This will set it up, and hoist the sail at the same time; when taut, rack again.

What is the use of racking again ?

If not, the sail would fly to leeward by the stay rendering with the halliards, if the upper block was not close up.

#### DOWNHAUL.

To the parts of the runner, round the bowsprit, secure a single block. The downhaul is spliced to the head of the sail, rove through the hanks, through the single block, and in on the forecastle. When a stay is fitted, the downhaul block is seized to the strap round the bowsprit. The downhaul is often double, if so, a single block is secured to the head of the sail, the standing part of the downhaul secured close to the block in the bowsprit, hauling part led in as before.

#### SHEETS.

Deck tackles are generally used ; they are hooked to the clue of the sail, moused well, one tackle on each side. When the sheet is aft, the weather one is overhauled. The after blocks are hooked to eye or ring bolts, as convenient, and should not be too high or too low ; if too low, or too much up and down, they slack the foot ; if too high, the after leach. The falls rove through leading blocks ; the after hooks should be well moused.

## MAIN STAYSAIL GEAR.

The stay is fitted the same as the fore, and sets up round the crosspiece in the fore bitts, after being rove through the hanks.

Halliards the same.

## DOWNHAUL

Is rove through a block strapped round the bitts for the purpose, or one hooked to a strap or bolt, well moused. If rove double, the same way.

## GRUMMETS FOR STAYSAIL.

Instead of iron hanks, I have seen pieces of rope, a wall knot worked on one end, an eye spliced in the other; these are long enough to go round the stay, and button. They are secured to the eyelet holes in the sail with a seizing, and are always kept to it. I have seen the sails set on the spring stays, when fitted in this way, but prefer separate stays.

There are other ways of setting storm staysails; what I have mentioned are in most general use. When a fore trysail can be got, main staysails should never be drawn, as a ship will keep much better to windward with trysails and fore staysail than under the staysails alone. I served one time in a corvette (the Florida), who would never keep to windward with them; and

when fitted with three trysails, she was the most weatherly ship I ever belonged to.

#### MIZZEN STAYSAIL

Has long been done away with, and a main trysail substituted.

#### TOPGALLANT STAYSAILS.

##### JACKSTAY.

Take a piece of rope of the required size and length; splice an eye in one end, and secure it round the fore topmast-head, on the after side, with a lashing passed through the eye and round the eyes of the rigging. Have a hole bored on the after part of the fore cap, put a formed thimble on the jackstay, and reeve the other end through the cap; turn a thimble into the end, and set it up to the eyes of the fore rigging.

#### STAYSAIL STAY AND TRACING SAIL IN ONE.

Take the rope for the stay, splice an eye in one end, place it round the main topgallant mast-head, reeve the end through the eye, and haul it taut; reeve it through the hanks for the sail, and through a single block seized into a single strap, leaving an eye beyond the seizing to take a small lashing.

**HALLIARDS.**

Seize a single block into a single strap, leaving an eye beyond the seizing to take a small lashing, secure this block round the main topgallant mast-head on the fore side, and reeve the halliards through it—send one end into the fore top, the other through lubber's hole on deck.

**TRICEING LINE.**

The single block on the stay is seized to the cringle in the upper corner of the luff of the sail, when bent. Put a screw bolt into the fore topmast trusseltrees, and strap a single block into it; (the jackstay can be secured to the same bolt)—reeve the stay from the block in the luff of the staysail, through that in the bolt, send the end on deck, and through a leading sheave or block. This will make the stay and triceing line in one.

**STAYSAIL SHEETS**

Are middled, bent to the clue of the sail, and when set, sent on deck, one on each side, and taken aft.

**TACKS.**

Are middled, and bent to the lower corner of the luff, and are hauled out to the weather top-

mast rigging or amidships, according as the wind is at the time.

#### DOWNHAUL.

Seize another single block into a bolt on the opposite side to the triceing line, through this block reeve the downhaul, splice one end into the head of the sail, reeve it through the hanks, send the other on deck, and reeve it through a leading block or sheave.

#### ROYAL STAYSAIL

Is fitted much the same way from fore top-gallant mast-head, halliards through a block at main. This sail is often set flying; when this is the case, it is fitted, besides sheets and tacks, with halliards and triceing line only. But whenever this sail is used, it should be set as a top-gallant staysail; as I have seen them (when set flying), in hauling down, get over the yard arms, and give a deal of trouble.

I have very seldom seen these sails used in the ships I have served in, and am positively convinced, from repeated trials in sailing with other ships, and by heaving the log, &c., they are of no use whatever, but rather the contrary, for when set, on a wind, they make a ship leewardly, and never added, in the most trifling way, to our

speed. I was in two experimental squadrons, where every thing was tried that ability could suggest, and all agreed, who I spoke to on the subject, that they were of no use.

The jib staysails are very handsome sails, and in saying so, I give them all their merit ; I know there are many who will differ with me, as to the staysails, but there would never be room for improvement if every one thought alike : I do not mean to say that I am right, as I have only given my opinion from repeated trials.

#### MAIN TOPMAST STAYSAIL HALLIARDS,

If single, are spliced into the head of the sail, rove through a single block at main topmast-head, and on deck.

#### WHEN DOUBLE,

A single block is seized into a single strap, leaving an eye beyond the seizing, through which it is lashed to the head of the sail ; the halliards are rove through this block, and one end clenched round the mast-head, between the crosstrees, the other rove through the block, as when single.

#### DOWNHAUL

Is spliced into the head of the sail, rove through the hanks, and through a single block strapped round the main topmast stay, close under the top.

## SHEETS

Are bent to the sail, and when set, are sent on deck, and rove through the blocks for the purpose, hooked to bolts by the gangway port.

How are these blocks fitted?

Two are seized into one strap, one small and one large, a hook and thimble on the strap, the small one uppermost; a seizing is passed between both. The topmast staysail sheets through the large one, topgallant through the small. These blocks are in the gunner's care—a fiddle block will answer.

BENDING THIS SAIL. (*See Bending Sails.*)

## STUDDING SAIL GEAR.

## LOWER.

Swinging booms. Have goose necks in one end, which, in line-of-battle ships and frigates, hook to the foremost part of the fore chains to iron straps fitted for the purpose. They are got in their place, when brought alongside, with a burton, from the foremost shroud, and another on the after backstay. A third from the outer end a cleat is nailed, to prevent the rigging coming in. When secured for sea, they are got close to the side, and lashed to a bolt for the purpose. In harbour, they are hooked to the bends, which

bringing them lower down, cause the boats, when moored, to ride easier. A small Jacob's ladder is fitted to the fore chains, and sets up to the boom close into the side, for the men to get into their boats with.

#### RIGGING SWINGING BOOMS.

*Fore Guy*—Is spliced round the boom close outside the cleats, the other end taken forward and rove through a single block strapped into a bolt in the bowsprit cap, then in on the forecastle. I have seen it also rove through a block on the spritsail yard arm, and it was found of great use in getting the boom from the side, if no spritsail yard, blocks can be fitted round the outriggers.

*After Guy*—Is spliced round the boom close to the fore, and the other end led in through a sheave in the side; in large ships, on the main deck, close before the gangway port; in flush vessels, through the bulwarks.

I have seen the fore and after guys spliced one into the other, forming a cut splice, but it is a bad plan, as the rope stretches, and the guys become loose, and are liable to slip over the cleat.

#### TOPPING LIFT

Is spliced round the boom close to the guys.

## TOPPING LIFT BLOCK.

Take a single block, large enough for the rope to be rove ; seize it into a single strap, wormed and served, leaving a small eye beyond the seizing to take several parts of small rope.

Seize this block on to the second shroud (if only one swifter, forward) half-way between the futtock stave and seizing of the eye, passing sufficient turns to secure it well.

## LIZARD.

On the topping lift put a large sized thimble ; round this thimble splice a piece of rope about four fathoms long ; for a large ship, a piece of three-inch I should think large enough. Reeve the topping lift between the first and second futtock shroud through the block, and send the end between the shrouds, on deck.

I have seen this block seized to the eye of a shroud, well up, but prefer the former.

What is the advantage of seizing the block only half-way ?

As there will be more space between the shrouds than close up, which will allow the topping lift to work clearer, and cause no chafe.

A luff-tackle purchase is often fitted to the topping lift, half-way up the fore rigging, it is never far enough apart, when at sea, to get the

boom from the side, as I have always seen a tail jigger clapped on for the purpose; but in harbour, it answers to square the booms, and saves the trouble of always getting jiggers up.

In preference to the purchase being fitted on the end I would have a lizard thimble worked on the topping lift, well up, the lower end rove through a single block strapped in the chains, and always use a jigger the same as a topsail lift. When the booms are square, rack both parts together.

#### LOWER STUDDING SAIL TACK BLOCK.

Seize a single block into a double strap, leaving an eye to fit the boom end, wormed and served. Then take a piece of small rope, and pass several turns round the strap and through the eye bolt, half-hitch round all parts, and seize the end.

#### TOPMAST STUDDING SAIL TACK BLOCK.

Take a single block the required size, strap it with a good piece of rope, leaving a tail long enough to clove-hitch round the boom, and seize to the eye bolt in the end. The block must lay on its side.

This block is often strapped round the boom, and kept in its place with a lashing passed round

the strap and through the eye bolt in the end of the boom, or a hole bored for the purpose. Sheaves are sometimes cut, but they are bad, as the least slew in the boom takes away whatever purchase the sheave would give.

What is the lashing which goes round the strap and through the boom end or eye bolt called?

A snorter.

#### LOWER STUDDING SAIL HALLIARD BLOCK.

Seize a single block into a single strap, leaving an eye to fit the boom taut. A small cleat should be nailed, to prevent the block slipping in, or the strap, secured with a snorter. When the halliards are rove, a single block is hooked to the burton pendant, or lashed. I have seen a pendant with a block spliced in one end, and secured to the mast-head, under the rigging, with a lashing passed through an eye spliced in the other, and round the mast-head. This is quite unnecessary, as the block, lashed or hooked to the pendant, answers the same purpose.

#### REEVING THE HALLIARDS.

Reeve through the block to the pendant, before the rigging, then through the block on the boom. Send the hauling part through lubber's hole on deck, and through a leading block.

**BOOM BRACE**

Is spliced round the boom between the blocks. A single block is spliced in the end, half-way between the boom, when the yard is square, and the main rigging, and reeve a fall. The standing part, when the sail is set, is clove-hitched round the foremost shroud of the main rigging; the other end, through a leading tail block to the same place. Small ships are not allowed boom braces.

**TRIPPING LINES,**

In large ships, are double, made with two single tail blocks. In small ships, they are always single.

**ROVE DOUBLE.**

One end of the fall is hitched round the neck of the boom iron, rove through one tail block, then through the other, which is put on the boom iron, close to the standing part. When the sail is to be set, the lower tail block is clove-hitched round the jack yard in the foot of the studding sail.

**INNER HALLIARDS.**

A tail block is clove-hitched on the neck of the boom iron, a fall rove through it, and bent

to the inner clue of the sail when getting ready for setting. With a large studding sail, the block will have to be placed farther in.

When the sail is not set, and the boom rigged in, the inner halliards are used to trice the gear up, a bowline knot being made round all; it is then stopped with yarns snugly to the jackstay, the ends of the gear coiled inside the futtock shrouds, being previously stopped together.

#### LEADING THE HALLIARDS.

Sometimes the end comes on deck from the block. I have also seen it led through a tail block, hitched round a futtock shroud, and then on deck. Also rove through a block in the same place and none on the boom iron; the latter is best, as it will hoist the sail higher up if required.

Small ships should set their lower studding sails flying, especially when there is any swell on, as they roll the boom under water, and often carry something away. I have seen a topmast studding sail boom sprung by rolling the foot of this sail in.

#### SET FLYING.

A yard, the breadth of the foot of the sail is secured to each clue, a piece of rope, a little

longer than the yard, is spliced round each end, forming a span. In the centre of the span hitch the after guy. I have seen a brig run in a heavy sea with a lower studding sail set in this manner, and never even wet it.

#### SHEETS

Are bent to the sail, and made up in it.

#### BOOM JIGGERS.

Large ships rig their topmast studding sail booms out with jiggers, they are generally gun-tackle purchases; I have seen a luff.

#### GUN TACKLE.

Take two single blocks, strap them with a tail, and reeve a fall, the standing part in one of the blocks, which, when used, must be the outer one. Have another single tail block on the strap of the jeer block or slings.

#### TO RIG OUT.

Take one tail block out and secure it round the neck of the boom iron, the other round the end of the boom; reeve the fall through the leading block, and send the end on deck. Lower the gear down, man the fall, and rig out, and pass the heel lashing.

## TO RIG IN.

Shift the block from the boom to the slings, the other block bring in, and secure to the boom end through the eye bolt. Man the fall, cast off the heel lashing, and rig in. There is one on each yard arm. In harbour, the block with the standing part in is secured through a hole in the top, and answers as triceing jiggers. The fall unrove from the leading block in the slings and the block taken off. The triceing jiggers are often fitted on purpose, and kept hooked to thimbles under the fore part of the top.

## TOPGALLANT STUDDING SAIL BOOMS.

*Triceing Lines*—Are single. A single block is seized on to a shroud, close up, a fall rove through it; one end is bent to the boom, the other sent into the top. A thimble should be fitted a few feet above the topsail yard, on the foremost shroud, and in harbour, the triceing line rove through it. As generally every thing is done in a hurry, trying who will be first, that the booms are hardly ever secured, if lowered, after loosing to dry, and the men running out on the yards with the boom swinging about, some accident may occur; I saw four men fall off a topsail yard from this very circumstance.

When no boom brace is allowed, and no lower

studding sail set, carrying the topmast studding sail, blowing fresh, how will you put a brace on without rigging the boom in?

I will take a piece of a broomstick, or anything that will answer for a toggle, and secure it to the lower studding sail halliards, take the end aft, and haul the toggle close to the block on the boom, and haul it well taut, and belay; it will answer equally well as a brace. Should the boom top up much, and require a martingale more than a brace, toggle the halliards the same way, and bouse it well taut through a leading block perpendicular to the boom.

How will you secure the toggle on the halliards?

Clove-hitch round the toggle, hauling the parts well taut; the inner end of the halliards should not be let go, for in case the lower studding sail requires to be set, the end can be hauled in, the toggle taken out, and the halliards overhauled for bending.

#### FORE TOPMAST STUDDING SAIL GEAR.

*Tack*—Is rove through the block on the boom end, and when the sail is set, is rove through a tail block in the main rigging, or one hooked to a salvage strap round the shroud. When not set, is stopped in with the lower studding sail gear.

## SPAN BLOCKS.

Seize two single blocks into each bight of a strap, long enough to go across the topmast cap, allowing the blocks to hang clear on each side. Take a piece of small rope, and pass a lashing round the strap, over both blocks, under the cap, and then seize the blocks to eye bolts in the cap.

How is the strap made?

Take a piece of rope of sufficient size and length, worm and serve it, splice both ends together, and secure the blocks in their places with round seizings. Through these blocks reeve the halliards.

How will you reeve them?

I will first reeve through the span blocks down; take the upper end and reeve it down on the fore side of the topsail yard, through the block on the neck of the boom iron; the other end send down abaft the foremost crosstree before the topmast rigging, through lubber's hole on deck, and through a leading block. When not in use at sea, the bending end is hitched round the clue of the topsail, the hauling part hauled up in the top. In harbour, they are generally unrove, and the span blocks taken down.

## DOWNHAUL

Is bent to the sail, and made up in it. (*See Fitting Sails.*)

## SHEETS.

Are also bent to the sail and made up.

## TOPGALLANT STUDDING SAIL GEAR.

If rollers in the topgallant rigging, the halliards are rove through them, one end goes into the top abaft all, before the after cross-tree, the other through the jewel block on the yard arm.

How are the jewel blocks fitted ?

They are single blocks, seized into single straps, having an eye to go over the bolt in the yard arm of topgallant yard. A small toggle is secured to the strap with a nettle laniard. The eye in the strap is put over the bolt, and the toggle put in. The upper end of the halliards is rove through this block on the foreside of the topgallant yard. When the sail is not bent, the studding sail halliards are overhauled down, and hitched to the foremost shroud ready for bending. The jewel blocks are always taken off when getting ready to send the yards down, when an overhand knot is made on the end of the halliards, to prevent them from unreeving from the blocks. Whenever the order is given to "unbend the topgallant gear," the jewel blocks must be taken off.

## TACKS.

Sometimes sheaves are cut in the boom ends, but as they hardly ever answer well, and cause delay, and more men to get the tack out, blocks are decidedly preferable.

Tail blocks are best, as they can be so easily taken off and on. I prefer a clove-hitch round the boom, and the end secured to the eye-bolt, to a hole bored for the tail to reeve through, it only weakens it, and is not necessary. The tack is rove through this block, and when the sail is to be set, the inner end is bent to the clue of the sail; the outer led to the after part of the top, where it is hauled out, and generally belayed to a shroud or cleat. Belaying either the halliards or tack to the rigging is bad, as they are constantly coming up, and cause orders to be given a dozen times in a watch to "hoist that sail taut up." Cleats should be lashed to the topmast rigging for the halliards, and nailed on the after part of the top, for the tacks; two small tail blocks, one on each side, secured to the after futtock plate, for leading blocks, are of great use in getting the tacks out.

## MAIN LOWER STUDDING SAIL GEAR.

This sail is hardly ever set; I have never seen one. When used, the gear is fitted the same as the fore.

## TOPMAST STUDDING SAIL GEAR.

The same as fore.

## TACK

Is led aft, through a leading block on the quarter.

## TOPGALLANT STUDDING SAIL GEAR.

The same as fore.

## FITTING SAILS.

## COURSES.

*Fore and Main.*—If the tack blocks are to be fitted with dog-and-bitch thimbles, which is decidedly the best plan, they must be put in before leaving the sail loft, as the rope will require to be taken up in the clues.

## TACK BLOCKS WITH THIMBLES.

Secure the clue of the sail to a stool, or whatever you intend to work the strap on, place the block close to it. Take some good spun-yarn, size according to the sail; the *Britannia's* was eight yarns. Have a hole bored in the stool, and place the swallow of the block over it; put a bolt through the block and hole to keep it in its place. Then commence warping round the thimble in the clue and score in the block, taking

care that each part bears an equal strain. When sufficient parts are passed, half-hitch over all, and point with the same; wedge the strap well out. Then place the block, take a small bolt, lay it across the upper side of the strap, take a good strand, knot both ends together, lay it across the strap on the upper side, pass it across underneath, bring a bight round the bolt on each side, put a small bolt in each bight and heave round the first; as the turns accumulate on the bolt across, the strap comes closer together; then pass a good round seizing. The ends of the pointing should be placed under the seizing. Dog-and-bitch thimbles prevent the half cant, which is always in clues of topsails and courses, when the block is secured in the clue.—The thimbles should be formed.

#### BLOCK IN THE CLUE OF THE SAIL.

The sail is fitted, leaving a long eye to take the tack block, which is kept in its place with a round seizing passed round the clue, close to the block.

#### SHEET BLOCKS. (*See Fore Sheet.*)

#### POINTING SAILS.

Trice the sail up by the earings, sufficiently

high for the men to work at the reef, sitting down; several men can work at a time, two together, one on the fore side and one on the after side; the longest legs are on the after side.

The man on each side shoves his point through the eyelet hole, and reeves the end of his partner's point through the eye of his own, his partner doing the same with his. They then haul taut together, and when nearly close, each puts a sheave on the point, place their feet against it, take a turn round their hands with the point, and work with their feet against the sheave until quite close, and so on to the next, until the reef is complete.

#### BOWLINE CRINGLES.

Foresail, two :—Mainsail, three.

How will you put them on ?

Take a strand out of a piece of good rope, keeping the form in it; pass one end under two strands of the bolt rope, and haul it through, leaving a long and short end, then lay both parts together, still preserving the form of the rope. When sufficient length is laid up to form the cringle, put the long end under two strands, as at first, and work the long end back, like forming a grummet, to where the cringle commenced, which will form the rope the same size as the

piece the strand was taken out of. Work both ends with and against the lay, between the strands of the bolt rope, putting them in twice one way, and once the other; cut off the spare ends, leaving a couple of inches clear of the bolt rope, and whip them well.

#### WITH EYELET HOLES IN THE SAIL.

Eyelet holes are often worked in the sail, close to the rope for the cringles to be formed through, and which are preferable, as the cringle is made then round the entire rope, and not between the strands, which must be much more secure, and less injury to the rope. The cringle is worked the same as before, and the ends put into the lay of the bolt rope, with and against.

#### BOWLINE BRIDLES.

*Main.*—Take a piece of rope, once-and-a-half the length between the two cringles, splice one end into the upper one, put a formed thimble on it, and splice the other end into the next cringle.

Round the thimble, splice another piece of rope, once-and-a-half the distance between the two next cringles, put a formed thimble on it, and splice the end into the lower cringle. Take a piece of small rope, splice both ends together,

put it round the thimble, and put a thimble in both bights; close to this thimble, pass a round seizing, cross it both ways, and close to the other thimble pass another, when the bridle will be ready for reeving to the bowline.

What do you mean by a formed thimble?

One that is joined, when making into a complete ring, and not both ends merely brought together as in common thimbles.

#### FORE BOWLINE.

Take a piece of rope, measured, as in the mainsail; put a thimble on it, and splice both ends into the cringles; round this thimble place a strap of small ropes, same as in the main bowline; but instead of a thimble, put both bights round a toggle; clap a round seizing close to both, and cross both ways.

#### REEFING COURSES TO JACKSTAYS.

When this plan is adopted, there is only one point requisite, and that on the fore side of the sail.

How will you put them in?

Reeve the point through the eyelet hole from the after side, the points being made with double eyes. Through the eyes reeve a small-sized

rope ; this is called the jackline. Between every four eyelet holes, stitch the rope well to the sail. On each yard arm leave three points out. Take a piece of small rope, splice one end to the eyelet hole in the head of the sail, reeve it through that left in the reef, and splice the other end into the same eyelet hole in the head, leaving about two feet slack. This will be found of much use in gathering the sail up for reefing.

#### EARINGS.

Head.—Take a piece of rope of the required length, splice a long eye (about four feet) in one end, put it through the cringle, and reeve the end through the eye, and haul well taut, and whip the end. Cringles in the head are generally served, and sometimes the bowline.

#### REEF CRINGLES

Are put in the same as bowline, but have thimbles in them, and are served.

#### REEF EARINGS

Are fitted the same as the head: an eyelet hole is worked below the cringle, large enough to take the earing. Through this put the earing and reeve the end through the long eye, and haul it taut through. I have seen the earings in the

cringles, but the cringle cannot be so well hauled up on the yard, and, consequently, will not be so well secured for carrying sail, and puts more strain on the yard arm points, and injures the sail.

#### BUNTLINE TOGGLES.

Take a piece of small rope, splice both ends together, reeve it through the eyelet hole in the foot of the sail, made for that purpose; put a toggle in both bights, clap a round seizing close to the toggle, and another to the rope. This strap should be long enough to allow the buntline to go over and lay under the toggle. There are two on each side.

#### FITTING TOPSAILS.

They are pointed the same as courses, but never reef to jackstays. Sometimes only every other point is put in the first reef.

The length of the points must depend on the size of the ship; in each reef they increase six inches towards the close reef. The after legs are the longest, except in the close reef, when the foremost are the longest. I have seen the points the same length on both sides.

What is the advantage of having the after legs longest?

They allow the sail to be well slewed up on the foreside of the yard.

Why should the foremost be longest in the close reef?

As the earings haul out abaft the yard, the sail is hauled well up abaft to cover the other reefs, which requires the longest to be on the foreside.

#### REEFLINES.

Few ships are fitted with them, but they are of great assistance in reefing the sails, particularly when blowing fresh, and going free.

Take a piece of small rope, splice one end into an eyelet hole in the head of the sail, seize it round the neck of one of the first reef points on the foreside of the sail, in a straight line with the eyelet hole, leaving enough of slack to prevent the sail girting; then seize it to the point under in the second, then the third reef. Splice an eye in the end, and seize it to the neck of a close reef point. There are three on each yard arm.

I saw these tried in a three-decker, and it was surprising the difference it made as to quickness in reefing. Hauling on the lines completely spilt the sails, and prevented what the men were

obliged to do always when the sail was full, or when not properly laid, to keep beating the sail with their hands to try and get the point to turn up towards them. Any one who has been much in a top will be able to answer for what I have stated.

How far are these lines asunder?

Divide the yard arm into three, from the quarter block to the rigging cleats.

Small vessels do not require more than two.

#### FORE TOPSAIL REEF-TACKLE SPAN.

Two cringles are put in the bolt rope, about two feet apart, below the close reef. Take a piece of rope, splice one end into the upper cringle, whip the other. When the sail is to be bent, reeve it through the thimble in the strap of the reef-tackle block (if double) and clench the end to the lower cringle. If single, a toggle is strapped round a formed thimble put on the span, and the eye in the reef tackle goes over it.

Why not splice both ends of the span into the cringles?

Because the splice would have to be drawn in case of shifting the sail, or the reef tackle unrove.

In the first, it would injure the rope; in the second, cause delay.

MAIN TOPSAIL REEF-TACKLE SPAN.

The same as the fore.

BOWLINE CRINGLES.

Fore topsail has three. They are put in the same as a course.

BUNTLINE TOGGLES.

Fitted the same as in courses (or eyelet holes worked), one on each side.

REEF AND HEAD EARINGS.

The same as courses.

BOWLINE BRIDLES.

They are cut to the same proportions, once-and-a-half the distance between the cringles, and fitted with formed thimbles, and spliced into the cringles in the same manner as a course. They toggle to the bowlines. Toggle and thimble being on the lower bridle.

MAIN TOPSAIL

Has four cringles and bridles, fitted the same way.

BUNTLINE TOGGLES.

The same as the fore.

#### **MIZZEN TOPSAIL**

Has two bowline cringles, put in the same as the others.

#### **BOWLINE BRIDLE.**

One end spliced into each cringle, 1 thimble on it; a toggle is strapped to the same as the others.

#### **BUNTLINE.**

Two toggles are strapped to the foot sail, the same as in the fore and main forked end is toggled to them when the sail

#### **REEFLINES.**

Two on each yard arm. Mizzen topsails generally fitted with three reefs; I have four, which, except for the sake of uniformity is not of much use.

#### **REEF TACKLE.**

ROPE BANDS

Are made as sinnet, with an eye left in one end in making. The eye is put through the eyelet hole in the head of the sail, the end rove through it, and hauled taut.

TOPGALLANT SAILS (FORE).

BOWLINE CRINGLES

Has two, put in the same way as in the other sails.

BRIDLES.

Put a thimble on, and splice one end into each cringle, and strap a toggle to the thimble.

SHEET TOGGLES.

If the sheets are intended to toggle, one is secured in each clue, with a round seizing close to the toggle.

If they are to be bent, a thimble is generally put in the clue, and the sheet bent to it.

How would you bend it?

Reeve the end through, take a round turn round the clue under the hauling part, which will jam the turns and prevent it slipping. It is a sheet bend, with an additional turn round the clue.

The former is preferable, as I have often seen

the thimble turn out of the clue, and the edge chafe the sheet when not parcelled or served.

#### BUNTLINE TOGGLES.

Two straps are fitted with toggles, and should be, in a large sail, about four cloths apart; they are fitted through eyelet holes, worked in the foot for the purpose. When the sail is bent, the eyes in, both ends of the buntline (it being forked) go over the toggles.

#### MAIN TOPGALLANT SAIL.

The same as fore.

#### MIZZEN.

The same.

#### ROYALS

Are fitted the same as topgallant sails, but seldom have bowlines, except when set flying.

When topgallant sails and royals are bent to jackstays, they are sometimes fitted with small rope-bands. I have seen them frequently seized to it with a two-yarn nettle.

#### EARINGS TO TOPGALLANT SAILS AND ROYALS,

Are spliced into an eyelet hole in each corner,

in the head of the sail, which is made large enough to take two or three outer turns.

#### FORE AND AFT SAILS.

Jibs, flying jibs, staysails, spankers, trysail, and gaff topsail, all come fitted from the sail loft, ready for bending.

#### STUDDING SAILS,

With the exception of lacings and earings, come out of the sail loft ready for bending.

#### TOPMAST STUDDING SAILS.

##### DOWNHAULS.

Block.—Take a single block, seize it into a single strap, leaving an eye to go over the clue of the sail, and seize it well through the clue, to prevent its slipping up. I have seen the block put through the clue before splicing both ends together.

##### DOWNHAUL.

Take a piece of rope of the required length, splice one end into the cringle at the head of the sail, reeve the other through a thimble seized to the outer leach, and through the block from out in. It is always made up in the sail.

#### SHEETS.

Take a piece of rope, and bend it to the

cringle in the foot of the sail, opposite to the tack; leave a long and short end; the former, when the sail is set, comes on deck, the latter into the top. They are also made up in the sail.

#### DOWNHAUL ROVE DIFFERENTLY.

The following plan was mentioned to me by a very excellent seaman, who had been first mate of several free traders, and who said, when weak-handed, he found very great advantage from it:—

Splice an eye in the end of the downhaul, large enough to take the end of the studding sail yard. When the sail is bent, reeve this eye between the head of the sail and the yard, close inside the head earing, and then put the eye over the yard, outside it, on the *inner* yard arm. The downhaul rove through the block as before, and on deck.

Directly the hal'iards are started, in hauling down, the sail, from the manner the downhaul is led, takes half a turn in, which spills it, and it comes down much easier and quicker. In setting the sail, by keeping the downhaul hand taut, prevents the inner yard arm flying before the topsail, which keeps a man more on deck. The reason of having the eye to go over the yard arm, instead of being spliced into the head of the sail, is, when only one topmast studding sail, it can

be shifted to answer for either side ; being put inside the earing, before going over the yard arm, prevents it slipping off. I never saw a down-haul rove in this manner, but should think it would answer extremely well.

#### SPARE SAILS

Should be fitted and made up ready for going off and stowing. They should be well swept and dried before making up. The bending suit should also be made up when fitted.

#### MAKING UP A COURSE.

Stretch the head of the sail taut along the deck or loft ; bring up to the head the belly band, then the foot, leaving the clue blocks out at each end, also the bowline bridles, and roll taut up ; pass the head earing round the sail close inside the bolt rope, and put a stop of good spun-yarn to every seam. The reef earings are made up in the sail.

#### MAKING UP A TOPSAIL.

Stretch the head of the sail taut along, bring the second reef up to the head, and lay all the points and earings snugly along ; then bring up the belly band, then the foot ; leaving the clue blocks, bowline bridles, and reef tackle, toggles

or span, out. Roll well up, and stop with spun-yarn at each seam. The head earings expend round the ends of the sail.

What is the advantage of leaving the clue blocks, reef tackles, &c., out?

When the sail is sent aloft for bending, the sheets can be rove, reef tackles and bowlines toggled, without loosing the sail, which will be found of great use when blowing fresh.

#### TOPGALLANT SAILS

Are made up with the clues out, and bowline bridles, if wished, but they are always bent to the yards on deck; so the snugger they can be made up the better.

Would you secure the reef earings of the topsails to the cringles before rolling up?

Yes; I will half-hitch the end of the first reef earing to the head, second to the first, third to the second, and fourth to the third reef cringles; as there is sometimes much trouble in getting hold of an earing when it is not secured as above.

All spare sails should be tallied before being stowed in the sail room. I have seen some very knowing fellows boast of being able to tell any sail by its cringles, &c., and in two particular instances, when they were desired to get a sail

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out, both were the wrong ones. If a sail room is properly stowed, and the sail maker and second master take a list when doing so, there never can be any difficulty in finding what is wanted. To prevent all mistakes, a tally is desirable, and not in the way.

#### ROYALS

Are made up the same as topgallant sails.

#### FORE AND AFT SAILS.

Are always made up in the two after cloths.

#### JIB.

Stretch the sail taut along, double the head in, then the clue, making the sail as near the same breadth at head and foot as possible; then roll up and stop well. If for stowing, every three feet.

Spankers, staysails, trysails, &c., are all made up the same way.

#### STUDDING SAILS.

Lower, being nearly square, can be rolled up in either the inner or outer leach; expend the earing round the head, and stop every two feet.

#### TOPMAST.

Stretch the sail taut along, and overhaul the

downhaul through the thimble and block, and bight it along the whole length of the leach. Then roll up towards the inner leach, lay the sheets along the whole length of the sail, and roll up over all, and stop the sail well up with spun-yarn or foxes. The earings are expended round the head.

#### TOPGALLANT STUDDING SAIL.

Is made up also in the inner cloths.

#### PREPARING TO BEND SAILS.

It is customary to bend the light sails first, such as jibs, spankers, trysails and staysails, the latter very seldom until at sea.

Overhaul the jib and flying jib stay, and halliards, in on the forecastle. Have the lashing spliced into the sheets ready for passing, and seizings to the hanks. Keep the traveller close out, and the outhaul belayed.

Overhaul down into the top the reef tackles, and stop the blocks to the foremost shrouds (or the end, if single). Overhaul the topsail sheets from the yard arm, and half-hitch them round a dead eye, or foremost futtock plate. Buntlines into the top, and stop them to the foremost shroud above the topsail yard, or to the tye blocks—cluelines into the top, and stop them to the eye of a shroud (a rope-yarn stop will be quite suffi-

cient for all these purposes), and get the harbour gaskets on the yards.

Overhaul down the leachlines, slablines, buntlines, and clue garnets, and stop them so as to prevent their flying about.

Take two salvagee straps, put them round the neck of the boom irons, and to them hook the double block of a long burton; the single one overhaul down, and hook to a ring or eye bolt in the bulwarks, the fall through a leading block amidships.

Lower the gaffs down, brails overhauled, and seizings ready (three-yarn nettles) to secure them to the sails. If hoops, seizing should also be put on them, both ends rove through the bight.

Topgallant yards got out of the rigging and laid on the deck out of the way, ready for bending the sails.

When this is done, it is intended to bend all together, but it only causes confusion, and except in cases of necessity, should not be attempted, as the work is never so well done.

Take the forenoon for the fore and aft and light sails; and the next day, or the afternoon, for the topsails and courses; if sufficient time, better take the next forenoon. I have seen two or three fatal accidents occur from the men working on the yards after dinner.

I shall describe bending the sails separately, as it will be easier understood; every one who reads it, being aware, in a man-of-war, the duties are executed as nearly at the same time as possible. Topsails and courses together.—Fore and aft and light sails in the same manner.

#### SAIL TACKLE.

Take two single ten-inch blocks, for a line-of-battle ship; strap the upper one with a double strap, having a thimble seized in one bight, and a hook and thimble put on the other, before splicing the ends together. Secure the block in this strap in the third, with a round seizing. The strap should be long enough to go round the mast-head as a stay collar, and hook to the thimble.

#### LOWER BLOCK.

Seize another block, the same size, into a double strap in the third. This strap should be long enough to take a round turn round the sail when made up, then both bights stopped together.

#### FALL.

The standing part is spliced into the lower block strap, and then rove through both.

## LEADING BLOCK.

A single block seized into a single strap, having a hook and thimble. This block hooks to the strap of the lower block, round all parts, when round the topsail, and the hauling part led through it, hook moused.

## LEADING THE FALL.

When all ready for going up, the end of the fall is rove through a leading block, hooked to a ring or eye bolt in the forecastle bulwarks if fore topsail, and to break of the forecastle if main. Hooking these blocks well forward, will keep the sails clear of the toprims.

## BENDING JIBS.

## HALLIARDS,

If single, are spliced into the head ; If double lash the block, or toggle if fitted with one. Seize the hanks to the eyelet hole, commencing at the upper one, and continue until within six of the last, where splice a lacing.

## DOWNHAUL.

Splice into the head, to the same place as the halliards ; it is sometimes rove through the hanks ; it is preferable to have two or three

thimbles seized, at equal distances, to the luff through the eyelet holes.

What is the advantage of having thimbles ?

The hanks often jam in running down a jib, and causes it to be re-hoisted to clear them.

Round the downhaul close down, and stop the jib up in the foot, hoist a little on the halliards, and get it a few feet up the stay, so as to clear the forecastle bulwarks and bowsprit cap. Stop the halliards round the centre of the sail when stopped up. Take a clove-hitch with the downhaul over the end of the stay. Bend a rope's end to the clue to steady it going out.

Man the halliards and downhaul; take in the slack of the halliards, and run the sail out to the boom end with the downhaul. Take the clove-hitch off the end of the stay, haul taut the downhaul, clench the stay to the traveller, or lash it to the boom end, according as fitted. Cast off the rope's end from the clue, lash the sheets, and hoist the sail, and see if all is bent clear.

What is the use of putting a lacing when near the tack ?

The jib stows snugger on the boom.

#### COURSES.

#### FORESAIL.

Lay the sail across the forecastle, hook the

lower blocks of the yard ropes or burtons to the first reef cringle ; bight the head earings up, and stop them with a rope-yarn to the cringle. Toggle the buntlines, and clove-hitch a rope band to each leg. Clench the leach and slablines to their proper cringles, and seize the clue-garnet blocks. Trice the booms up, and man the yard.

Man the yard ropes, clue garnet, and buntlines, and run the sail up.

If a new sail, stretch the head well ; haul the earing out, taking care to keep the sail square the centre seam in the centre of the yard. Pass as many turns through the eyelet hole and round the jackstay as the rope-band will allow, leaving sufficient end to take two half-hitches round all, and reeve the tacks and sheets.

How will you pass and secure the head earing ?

Pass it over the yard, from forward, round the eyes of the rigging ; take it underneath, reeve it through the cringle from aft forward, and pass another turn as the first, and so on, until four or five are passed ; then take a round turn in the cringle with the earing, and expend it round the yard and through the cringle, and half-hitch round all, and seize the end.

Would you half-hitch round the inner or outer turns ?

Round the outer ones : it will bring all parts close together.

How will you stretch the head of the sail ?

Take two or three turns with the earing, and the men standing on the head will stretch it. This is called riding the head of the sail down.

How will you tell the fore from the after side of a sail ?

By the head rope, which should be placed next the yard.

#### REEF PENDANT

Is generally clenched to the second reef cringle. Sometimes one is put in below for the purpose. Some ships never use them, but hook the lower block of the burton to a cat's paw in the earing, first reeving two or three turns. This is a bad plan.

How would you fit them ?

If I cannot get a cheek fitted on the foreside of the yard, I will seize a single block into a single strap, leaving an eye beyond the seizing to take a lashing of small rope, and lash it well round the yard outside the rigging. Take a piece of rope, splice a thimble in one end, and whip the other ; reeve this through the block, and clench it to the cringle.

What is the use of the end with the thimble in ?

When the sail is to be reefed, I will hook the double block of a burton to an eye bolt in the cap, take it before all, and hook the lower block to the thimbles, send the fall from the double block through lubber's hole on deck, and haul the sail up for passing the earing.

Would you have one or two earings to each reef in the foresail?

Two: the inner an inch longer than the outer.

Why would you have the inner the largest?

Because all the strain comes on it in getting the tack down; and if the same size, requiring so many turns, it would take up more time.

#### FORE TOPSAIL.

Take a tail block, clap it on one of the legs of the topmast stay, well up, reeve a fall through it, overhaul one end down before all, the other through lubber's hole. Bend the foremost end through the sheave of the upper block of the sail tackle, run it up, pass the strap round the mast-head, and hook it to the thimble. Cast off the end of the whip, and bend it round the strap ready for sending the tackle down.

Station four men on each side of the top by the foremost shroud (if a large ship), and two more by the cap shore.

Get the sail on the forecastle, and round the

centre take a round turn with the strap of the lower block of the sail tackle, and stop both bights together, and hook the leading block. Bring the head earings in, and half-hitch their ends round the strap of the lower block.

Man the fall, trice the booms up, and send the topmen aloft ready for laying out, and hoist the sail sufficiently high for the clues to clear the toprim.

Take a turn, and man the reef tackles. Two of the men on each side of the top reeve the sheets, and take two half-hitches round the hauling part, they then clench or toggle the reef tackle. The other two secure the clueline (if single) or block; those by the cap shore toggle the buntlines. If the men are stationed before swaying the sail up, every thing is done almost as quick as it can be described.

The men now lay out on the yards, the bunt men pass the earings along to the yard arm. The reef tackles are hauled out, the sail tackles lowered, the stops cut, the earings passed, and rope-bands secured. Two men on each lower yard arm clench the topsail sheets, the bowlines are toggled, sail tackle sent down, topsail halliards manned, the gear lighted up, and the sail hoisted, and care taken to see that every thing is bent clear, and ready for service.

How would you pass the head earings?

The same as foresail.

What is the advantage of hitching them to the block of the sail tackle?

They are ready for passing out to the yard arms.

If a new sail, the head is to be riden down, and care taken to bend it square.

If all is clear, man the cluelines and buntlines, clue up, and lower the sail ready for furling.

#### BACK ROPES

Are ends of ropes passed round the mast to the foremost shrouds on each side, for the men to lean against in bunting the sail.

#### MAIN TOPSAIL

Is bent the same as the fore.

#### MIZZEN TOPSAIL

Is sent up by the buntlines, and bent in the same way.

How will you send it up by the buntlines?

When toggled, take a round turn with the bight round the sail, about four or five cloths apart, and stop the bight to the hoisting part. Man the buntlines, and walk the sail up. Large ships have two mizzen topsail buntlines. If only

one, it would be better to send the sail up with a light burton, hooked as a sail tackle.

What is the advantage of not allowing the men to lay out before ready for hauling out?

In case any thing should give way or slip, it may knock one or more off the yard.

#### BUNT JIGGER.

Two single blocks, one fitted with two tails, the other with a hook and thimble; it is used for bunting the sail.

The tails are clapped on the tye, well up; the lower block hooked to the becket or grummet in the sail; when the sail is ready for bunting, it is pulled up in the top. I have seen them fitted as follows:—

Seize the thimble into the centre of a piece of rope, having an eye spliced in each end, and lash it through both eyes round the trusseltrees, between the head of the mast and the heel of the topgallant mast. Fit the upper block of the jigger the same as the lower, and when wanted, it is hooked to the thimble. When fitted this way, the topmen hardly ever take them down, and never take the trouble to secure the bunt properly, which causes it to stand off from the mast, looks bad, and in wet weather, a great deal more rain gets into the sail than if

the bunt was secured round the mast with the legs of the bunt gasket.

If put on the tyes it is sure to be taken notice of, and for appearance alone, would be taken off, and the bunt properly secured.

How would you put the becket or grummet in?

Work two holes on each side of the centre seam, about a foot apart, and strengthen the sail by sewing a piece of canvass on the inside; through these holes work a grummet. The size of the strand must depend on the ship or sail.

Some sails are not fitted with beackets, two points being used instead, by knotting them together. This is a lazy, bad practice, and should never be allowed, as it not only drags the points out, but being so far apart, when hauled on, injures the sails.

Where are the beackets put in?

One between the first and second, and one between the second and third reefs; the first for furling with one reef, the second with two.

A becket is hardly ever put in for furling with the other reefs, it is not necessary, as the sail is generally furled over all, and so much sail being on the yard arms, when three reefs in, that the sail is easily bunted.

#### BUNT GASKETS.

These are always, as to fitting, a matter of

taste. When in a top I tried several. When worked with plait, they get out of shape, and I found, when made as follows, they answered best:—

#### MAKING BUNT GASKETS.

Take the distance between the two quarter blocks, and measure it off on deck, drive a nail slightly into the deck at each end, then measure from the centre the height the bunt is intended to be, and there drive another nail. Take a piece of rope, from two to three-and-a-half inch, and measure off enough to go over these nails, forming a triangle; splice both ends together, and seize a thimble in each corner, put these thimbles over the nails again, and fill the space in diamonds or squares, or any way, according to fancy. The crossing or filling pieces being made of plait, having an eye in each end, which seize round the rope, and stitch where the plait crosses.

How will you seize it on the yard?

The thimbles in each end are secured by the quarter blocks to the jackstay, and also in the centre. It is not necessary to have thimbles in each end, an eye will answer equally well. I have seen both.

By the upper thimble, middle and seize a long sinnet gasket, it should be sufficiently long

to go round the mast, when the gasket is boused up, to secure it and the bunt well into the mast. The bunt jigger should be hooked to the thimble in the gasket, and pulled well up before securing. The frame of the gasket being made of rope, it will not get out of shape.

#### TOPGALLANT SAILS

Are bent to the yards on deck. The earings are passed the same as the topsail, and the sail seized to the jackstay, the yard rope bent, sails furled, and got in the lower rigging.

How will you furl the sails?

Bring the leaches taut along the yard, and keep the clues in the bunt, then roll the sail up from the yard arm, and pass the gaskets.

How will you get the yard in the rigging?

Put the grummet over the yard arm, man the yard rope, and sway the yard up and down, put the lower yard arm into the grummet over the foremost dead eye, secure the upper yard arm with the laniard spliced round the shroud for the purpose: it is called a stop. The lizard should be singled ready tor going aloft.

How would you single the lizard?

Reeve it once through the thimble on the yard arm, and half-hitch round the yard rope with the bight.

## PARRAL LASHING

Should be coiled snugly up, and two half-hitches taken round all with the end.

How are the topgallant yards placed?

Fore, in larboard fore rigging; main, in starboard main; and mizzen, in larboard mizzen.

## ROYALS

Are bent the same as topgallant sails. If no jackstay, they are laced round the yard.

## FURLING ROYALS.

If set flying, the toggles are kept at the yard arms. If crossed, the same as a topgallant sail.

How are the royal yards placed?

Fore, to after starboard swifter; main, to after larboard; and mizzen, to after starboard.

How are they kept there?

Two grummets are worked, one round the swifter over the dead eye, the other over a sheer rattline. The lower yard arm is put into the lower, the upper over the upper yard arms, they are often stopped the same as topgallant yards.

The royal yards, in large ships, are kept in the tops, and stopped to the after shrouds of the topmast rigging. If set flying the tripping lines should be coiled up and stopped to the yard, a few feet from the lower yard arm, and not made

up in the sail. Being stopped a few feet up when in the lower rigging, will keep it more out of the way.

Why not make them up in the sail ?

The sail would have to be opened, and stopped up afresh before going aloft, which would cause delay and trouble.

#### FORE AND AFT SAILS.

##### BENDING A MAIN TOPMAST STAYSAIL.

It is got into the fore catarpins, the hanks seized to the sail ; the earing passed from the cringle round the main topmast stay, well up. The tacks bent to the lower corner of the luff, and when to be set, sent on deck ; the sheets are middled and bent to the after clue, and sent on deck, one on each side.

##### BENDING A SPANKER.

Overhaul the brails well, and pass the sail through their bights. Haul the earing in the jaws out first, and secure it ; then the outer one. Splice the lacing into the outer eyelet hole, lace in, and secure the lacing in the jaws. Bring the after leach taut along the gaff, and when within a few inches of the brail blocks, mark the place for the throat brails, also for the peak, opposite their respective blocks on the gaff, and seize the

brails to the leach rope by passing the seizing between the strands and round the brails. Eyelet holes, worked close to the leach rope, are far preferable for seizing the brails to.

How will you pass the throat earing ?

It is generally passed through an eye bolt in the lower part of the jaws ; but this never brings the sail close to the mast, which looks very bad. In preference, I would cut a score under the leather in the jaws, and pass the earing from the cringle through this score and an eye bolt on the upper side of the jaws, back through the cringle, and so on, until sufficient are passed to secure the sail.

#### OUTER EARING.

There is a cleat on the upper side of the gaff, to pass this round.

Take the earing from the cringle, pass it round outside the cleat, back through the cringle and round the cleat until enough of turns are passed, then take several inner turns round the gaff and through the cringle, frap all parts together (with the end, or remaining part of the earing) underneath the gaff; expend it, take two half-hitches, and seize the end.

How will you haul this earing out, and stretch the head well ?

I will take a small jigger, secure the double

block to the eye bolt in the end of the gaff, pass three turns of the earing, cat's paw the end, hook the other block of the jigger to it, and pull the earing well out.

If a new sail, and it requires much stretching, I will haul it well out before passing the earing, by hooking the inner block to the cringle.

Which parts of the earing will you frap together—the inner or outer turns?

The outer, as it brings the parts close together, and prevents any chance of their slipping over the cleat.

Would you have one or two earings?

I have frequently seen one, but would prefer two; as all inner turns, when much strain on them, should be a separate earing.

I will man the throat and peak halliards, hoist the sail up by degrees, and seize the hoops, or reeve the lacing.

#### TACK TRICEING LINE.

Both ends are bent to the tack cringle; or one end clove-hitched in the thimble, and both ends bent together. Either way will do.

#### OUTHAUL BLOCK

Is lashed to the after clue, if fitted so. If

with dog-and-bitch thimbles, it is put in the clue before bending, and made up in the sail.

#### TRYSAILS

Are bent in the same manner.

#### SHEETS.

Take a piece of stout rope, splice a thimble in one end, and serve it well, two-thirds of the length; point the other, secure it to the clue with a sheet bend, the end with the thimble being about a third the length (when bent) of the long leg. A single block, with a hook and thimble (when this sail is used) is hooked to a ring bolt abaft, on each side by the mizzen mast, and moused; the long end is rove through it and through the thimble. When the sheet is aft, the long end is belayed well aft. I have seen a block instead a thimble, but it is not necessary.

#### TRYSAIL BRAILS.

One throat, one peak, and one foot, seized the same as a spanker. No tack triceing line. A lashing is spliced into the tack cringle, and secured by several turns being passed under the heel through the cringle, and the end expended round

the mast through the cringle, and in frapping the lower parts together, the same as an earing.

When no mizzen staysail, a main trysail is drawn; and if optional, the former should never be used in preference.

I have seen the gaffs fitted with throat and peak halliards, the same as the spanker, but it is quite unnecessary. A single pendant spliced round the jaws, or into the bolt on the upper side, long enough to go between the trusseltrees, taken round the mast-head, and seized to its own part, is sufficient.

#### SPAN.

Round the gaff, a few feet from the end, splice a piece of rope, on this put a thimble; the other end splice round the gaff, a third from the jaws. Round the thimble splice a long pendant, overhaul two burtons down, hook one to the jaws, the other to the span, and get the gaff up in its place, and secure the pendants.

How will you secure the pendants?

I have seen them go round the mast-head, and also through thimbles, strapped round the eyes of the lower rigging, and seized to their own parts.

What is the length of the span?

From the earing cleats to the commencement of the jaws. I have seen them shorter and longer, but this length will be found to answer.

**CLEATS**

Are nailed inside the span at each eye, to prevent its slipping on the gaff.

**VANGS**

Are single: seized in the bight round the gaff, and rove through single blocks, strapped in the chains to an eye bolt, or round a chain plate. When required to be hauled taut, the end is passed in through a port or fair leader, and when sufficiently so, racked to its own part.

**FURLING SAILS.****TOPSAILS.**

This is generally done with two reefs in, as it divides the sail more equally, and prevents a high bunt.

The reef tackles are hauled out and buntlines up. The first reef earings hauled out and secured, the sail slewed well up on the yard, and points tied well taut.

The second reef earings are then hauled out and secured, and the after legs of the points hauled well taut and tied. Overhaul the reef tackles, and hand the leaches into the bunt taut along the yard; then the sail, pass the ends of the points in towards the bunt, and roll the sail neatly up on the yard arms; and pass the gaskets.

## FORMING THE BUNT.

When the sail is nearly rolled up, hook the bunt jigger, bouse it well up, lower the buntlines, and shove the sail well into the skin, taking pains to keep the bunt square; pass and secure the bunt gasket, take off the jigger, lower and square the booms, and pass the heel lashings.

How will you pass a reef earing?

For a first, second, and third reef, I will take it from the sail, on the foreside of the yard, round the cleat for the purpose, through the cringle, round the yard, and through the cringle, until three or four outer turns are passed; then reeve the bight through the cringle, from aft forward, take a round turn in the cringle, take the end from the latter under the yard, up abaft over, and through the bight, then back over the yard on the foreside, through the cringle from underneath the yard, slew the cringle well up and leach of the sail, and pass sufficient turns to secure, then expend the end round the yard, and half-hitch round all. The earing, after being expended, is often half-hitched round the lift, close down, there being no strain on the end.

How will you pass a close reef earing?

The earing is passed the same way, but hauled out on the afterside of the yard.

What is the reason of hauling out on the afterside?

Being hauled out abaft, it covers all the other reefs, and there being so much sail on the fore-side, it would never keep up.

How many outer turns would you pass for each reef?

Two for the first; three for the second and third; four for the fourth. For the inner turns, expend the earing.

Passing an earing, will be much easier learnt by seeing it done once, than by any description it is possible to give, and if this will induce the reader to see it, if only to convince him whether I am right or wrong, my object is gained, as, in either case, he will obtain information which has been my study throughout.

How will you place the clues, bowlines, and gear, when the sail is furled?

The cluelines are hauled taut up, and a gasket passed round the clues from the yard, the sail and rope being well broken into the bunt.

#### BOWLINES

Are taken from the tye blocks, where they should be stopped, taut down along the cap shore, and stopped well to the lower part of it, and hauled taut on deck.

#### FOOT ROPES.

It is much the fashion now, to stop them up,

but I think a ship looks much better when everything is in its place. If I may use the term, she looks *more natural*. Every sailor knows she must have foot ropes :—why hide them ?

#### TOPMAST STUDDING SAIL HALLIARDS.

If rove, can be hitched round the quarter or tye blocks, and hauled taut on deck.

How will you pass the gaskets ?

If harbour or short gaskets, take the end from under over the sail, and reeve it through the thimble, and pass it underneath, between the sail and gasket, two or three times. If fitted with toggles, take the end round under them, and secure as above.

#### LONG GASKETS.

One end is secured to the jackstay, the other passed round the sail and yard until expended, and half-hitched to its next part, or round the jackstay. There are two on each yard arm.

How many harbour gaskets are necessary ?

One on every other seam.

What are the necessary orders in reefing and furling a topsail ?

The earings well hauled out, a taut reef band, slewing the sail well up, and hauling the after legs of the points well taut, to cover the reefs,

and tyeing them clear of the topgallant sheets, and giving the sail a smooth skin.

In hauling out to dry, how will you shift the bowlines ?

Untoggle, and bend them to the buntlines, close to the toggles.

How will you bend them ?

It is not necessary to untoggle, although I have seen it done: bring the bight from the bridle, form a sheet bend with both bights, or stop them well to the buntline toggle.

#### FURLING COURSES.

No reefs are taken in. The leaches are handed in along the yard, and then the sail, and rolled up snug, and the gaskets passed; booms lowered, and gear (if wished), stopped up.

#### BOWLINES

Are stopped to the slings close down, and hauled taut on the forecastle.

In furling, how will you lay the bowline bridles in all sails ?

Toggle towards the bunt and bridles taut along the yard.

Why should the ends of the points be passed in towards the bunt in furling ?

To give the sail a gradual increase towards the bunt.

When a sail is well furled, how does it appear?

Neither above or below the yard, earings well slewed up, sail smooth under the gaskets, bunt square, and a taut skin; the heels of the booms should be square, and every thing necessary to be completed about the yards, before the boat goes a-head to square them.

#### TOPGALLANT STUDDING SAIL TACKS.

If rove, the upper end belayed to the tye blocks and hauled taut from the booms into the top.—Both parts are often stopped to the jackstay.

#### FURLING FORE AND AFT SAILS.

##### JIBS IN A CLOTH.

The sail is hauled close down. Gather the sail snug on the boom, then take the seam of the two after cloths and stop it with a rope-yarn round the jib stay, bring the seam taut in on the centre of the boom, then take the cloths on each side of the seam, and made a skin of them over the rest of the sail, making it the same height as near as possible, from the stay to the bowsprit cap. Have a gasket made the whole length, with legs on each side, long enough to go round the boom and tye, about three feet apart. I have seen the sail stopped round the boom with yarns, so as not to show; but it takes much time, and does not look well.

All ships, now, have generally a cloth made to furl these sails in ; it is much the best plan, and looks neat and snug.

#### FURLING WITH A CLOTH OR COVER.

The jib is hauled close down, and the sea gasket passed round it. The cloth is then placed over, and the stops tied. Eyelet holes are made in each edge for the stops. Jib sheets and halliards stopped and hauled taut.

#### SPANKER

Is also furled best with a cover ; it can be furled in the two after cloths the same as a jib, but never looks so well, takes time, and, in most instances, has to be loosed two or three times before it gives satisfaction.

In furling with a cover, the sail is brailed close up, and the cover stopped round, commencing from the end of the gaff.

#### STAYAILS

Are furled in the two after cloths, up and down the foremast-head.

The seam is stopped to the stay, and brought down the centre of the whole sail when rolled up, and a gasket, as in a jib, passed round it and the jackstay, to keep it steady. Royal and top-

gallant staysails are often furled in one cloth. They look much neater and lighter when separate.

#### MAIN TOPMAST STAYSAIL

Is furled in the fore catarpins, and sometimes the skin is formed in a triangular shape. I have seen several different ways. The object to be gained, is to stow it as snugly as possible; and I think the one I have mentioned the best.

#### FORE TOPMAST STAYSAIL

Is stowed as a jib, on the bees.

Stowing fore and aft sails requires more handy work than seamanship, the principal thing being to furl them in the smallest compass, and in the after cloths, as it brings the seams up and down. I have seen royal and topgallant staysails admired for their neatness from the deck, when the greater part of the sails was laying loose in the top.

This should be avoided as much as possible, as something should be sacrificed in appearance, to preserve a sail from injury. Taking a little trouble, will get all the sail in the skin, and although it may be larger, can be made to look neat.

Jibs require more pains than any other fore and aft sails.

## TRYSAILES.

Are stowed as spankers.

## SQUARING YARDS.

First get the trusses taut, square by the braces. Get the jiggers on the lifts. In squaring yards by the lifts, the laniards should always be unrove to two or three turns, the jigger hooked to them and hauled taut, and when topping on one lift always ease the opposite laniard with the jigger; if not, the laniard will render with jerks, and the yard will probably have to be topped the opposite way. The laniards should be racked when sufficiently up. The plan of nipping with the broomstick or hands, being a lazy, bad practice, and after much time spent in getting the yards nicely squared, the laniards have come up in securing. The ropes should be all hauled taut before the boat comes on board; all the ropes coiled neatly and low in the tops, nothing allowed to hang over the bows, which should be kept quite clear, and every thing done to make the ship appear, in every respect, what a man-of-war ought to be.

Being particular in one part, and not in another, has almost a worse appearance than when slovenly altogether. As the ship is considered a

would-be man-of-war, and is the cause of many remarks, which if heard by the commanding officer, would not be at all complimentary to his nautical knowledge ; if any thing should be studied more than another, the standing rigging, comfort of the officers and men, and gun exercise, should be the first. Masts well stayed, running rigging led so as not to chafe or take from the purchase ; cleanliness of course, as it materially tends to the health and comfort of all hands. I have seen the greatest part of those sacrificed to holystoneing decks, polishing copper pins, and ornamental wood, and paint work. These latter amusements of some commanding officers not only causes a bad feeling, but always a long black list. When men are to be punished by a black list, they are generally landsmen, or those who have not been long on board a man-of-war. They would be much more usefully employed by making spare points or swabs, taking the wheel at meal-times, or, after half an hour to dinner, exercising a sail, knotting and splicing, &c. This will not only be a punishment, but tend materially towards benefitting the service by making them something like sailors ; and many ships will willingly change junk for what they have made. If this could not be effected, it is most probable that the dock-yard would

give junk in lieu. As points, gaskets, &c. being ready when a ship is ordered to fit out in a hurry will expedite her much ; and when a number are made, they can be stowed away in empty casks until an opportunity offers of taking them to the dock-yard. There are a great many more useful jobs they could be employed on, which I have not mentioned, and which would soon come to the recollection of the commanding officer, such as heaving the lead, exercising a gun, making wads, picking oakum, &c.

#### BENDING STUDDING SAILS.

All are bent to the yard alike. The same precaution used as in other sails, keeping the rope next the yard. The earings are rove through the holes in the yard arms and cringle in the head of the sails, two or three outer turns taken, and the earing nearly expended in inner turns, then frap the outer turns together with the end, and half-hitch. They are laced to the yard. The lacing is spliced into one eyelet hole and rove through the other, and round the yard. They are sometimes bent by half-hitching the lacing, which keeps the sail much better up, and closer to the yard. A round turn is also used, by being passed round the yard arm and through the eyelet hole twice, and from the latter through

the next eyelet hole and round the yard. They are then made up. Topmast stopped to foremost shrouds of fore and main rigging; topgallant, in foremost part of the topmast rigging; lower, on the booms.

Tarpaulin covers should be fitted for the lower and topmast studding sails.

I have seen these sails bent with long rope bands, and unbent when taken in and put away, if dry.

How will you make a topmast studding sail up when bent?

I will overhaul the downhaul the length of the luff or outer leach, then take the foot up to the yard, and place the tack block out. Bight the downhaul along the yard, also the sheets, and roll the sail snugly up, and stop it with yarns, one on every other seam.

I have seen these sails, when placed in the rigging ready for setting, the sheets and downhaul left out and stopped to the yard; the tack stopped from the lower yard, up and down the foremost shroud, and bent to the sail. It was done with the idea of being very quick, but the sail, on the opposite side, which was set in the general way, was set with less trouble and in less time.

#### LOWER STUDDING SAILS.

Are bent and made up much the same way, with the sheets in.

What do you mean by preparing to set a topmast studding sail in the general way?

By bending the tack and halliards, when the order is given to get ready, as there will be plenty of time to get them bent while getting burtons up, jiggers on topsail lift, trusses and weather braces taut, and rigging the booms out.

#### TOPGALLANT STUDDING SAIL TACK.

Are generally kept bent, and slacked when bracing the yards up.

#### HOISTING UP AND IN BOATS.

##### QUARTER BOAT TACKLES.

Are rove through davits, on each quarter.

##### DAVIT TOPPING LIFTS

Are, now, always chain, and go from each davit head to the mizzen mast, where they are shackled.

##### FORE GUYS

Are spliced into eye bolts round thimbles in them on the foreside of the davit, and set up with a laniard to an eye bolt in the side, before the mizzen chains, and an eye spliced in the end. Splices served over all.

##### SPANS

Are spliced into eye bolts in the after sides of

the foremost davits, and foremost of the after ones. Splices served over.

#### AFTER GUYS

Are spliced into eye bolts in the after side of the davit, round thimbles, and set up the same as the fore ones, to an eye bolt abaft the mizzen chains for the purpose.

#### STOPPERS

Are pieces of rope long enough to reach from the davit to the water. They are spliced into eye bolts in the underneath side of the davits, and when the boats are up, passed round the slings and davit head, and half-hitched round all parts.

#### MAN ROPES

Are spliced round the span, Turk's-heads being worked on each side to keep them in their places. They are long enough, after having several overhand knots made at equal distances, to reach the water.

They are often dispensed with for neatness, but should always be on at sea, when it is necessary often to lower and hoist the boats up with men in them.

## FALLS.

There are two sheaves in the davit head ; the falls are rove through them and a single block ; the standing part of the fall spliced round the strap of the block, hauling part from the davit head.

## LOWER BLOCK.

This I have seen fitted several different ways, for hooking and unhooking quickly.

With the chain slings a hook is fitted (in making) to them, and the block seized into a single strap, having a thimble in it. With care, this is not so liable to unhook as when the hook is to the block, and ring to the slings.

I have seen the block strapped with a long tail, fitted as a stopper, rove through the ring, and half-hitched round the thwart. But although considered the best for lowering in a sea, the tail unreeving, I saw a boat nearly capsized by the tail taking a half-turn in the after ring.

The first I have mentioned is, in my opinion, preferable, for should the boat slack the tackles before being clear of the water, the weight of slings will keep them hooked.

Rope slings are now quite exploded, and, it is hoped, will never again be used.

## LEADING THE FALLS.

Have leading blocks hooked to ring bolts ; on the opposite bulwarks reeve the falls through, haul them taut separately. Then marry them together, and *walk* the boats up. Running them up is bad, it shakes the boats very much, and is no proof of seamanship or smartness.

I have known boats lowered down a dozen times ; when a bad reef would be looked over.

## STERN BOAT TACKLES

Are rove through the davits and lower blocks, fitted the same as quarter ones. When a boat is hoisted up under another, toggles should be seized on the fall, close to the lower block, after the boat is square, as nothing can look worse than a boat hanging crooked in the tackles.

## BOAT'S GRIPES

Are made with spun-yarn or small rope, as a sword mat. One end is secured round the davit head ; the other, when the boat is up, passed under her bottom, and secured in the chains with a lashing.

## GIG'S SLINGS

Are made as sword mats. When sufficient is made to take the boat's bottom and clear the

gunwales, the spun-yarn or rope between each part is fitted as a stopper, or salvagee parcelled and served over, and a thimble seized in the bight, which the tackle hooks to. The stretchers, made of wood, are put between both parts of the slings, long enough to keep them two or three inches off the gunwale.

#### SPAN.

Measure the length from the after ring bolt to the slings, when in their place, leave six inches for splicing, and cut the rope. Measure from the after slings to the fore ones, leaving about six inches, and cut. Measure from fore slings to the ring bolt in the stem, and cut. Splice a hook and thimble in the ends. The other ends splice together, forming two cut splices, large enough to go over the thimbles in the slings, and seize them in their place.

#### HOOKING THE SPAN.

When the slings are round the boat, hook the after hook to the stern ring bolt, foremost to the stem one. Put in the stretchers, hook the tackles, hoist the boat up, and pass the gripes.

#### HOISTING IN HEAVY LAUNCHES.

Take the runners and tackles, and secure the

pendants (if not fitted with a lizard) round the main yard, with a lashing of small rope; a lizard is by far the best.

How is it fitted?

A large thimble is put on the pendant, and a piece of rope, according to the size of the pendant; middle and secure it round the thimble with throat seizing. Two or three feet from the thimble (according to the size of the yard) unlay the rope, and fit the ends as salvagees, with nettle tails. These are put round the yard, and the tails secured. Lizards will never be found in the way on the pendants. The hooks and thimbles in the ends of the runners should be seized in and not spliced.

How will you seize them in?

Put the ends through the eye in the hook, and take it round the thimble, pass a throat seizing a quarter, and end.

How are the runners led from the yard arms?

Before all, round the main and fore caps.

#### HOISTING UP TACKLES AND STAYS.

Whips are overhauled down from the fore and main yard, and bent through the double block; another from the lower caps and bent to the pendants or runners. Other whips, one from the mainstay, and one from fore catarpins, and bent

to the upper blocks of stay tackles ; place the hook on the whip, and let it lay over the block, as it will be handy to get hold of, and hook. Overhaul the burtons from each cap, send these falls on deck, and hook their lower blocks to salvagee straps, round the lower yard arms, by the left blocks.

#### SECURING THE YARDS.

Get the lift and burtons well taut, and so as to bear an equal strain. Brace the fore yard well in by the starboard brace (if the boat comes in on that side), the main yard also a little in with the starboard brace. Get the trusses well taut, and see the braces well belayed.

Overhaul down the yard tackles, if fitted to the yards, if not, get them up. Man the whips and get the runners and tackles and stays up, and overhaul down their lower blocks into the boat. Hook the stays to the slings, and yard tackles to the straps in the lower blocks of the stays.

The lower blocks of runners and tackles hook to the ring bolts.

To the short pendant of mainmast, lash the main tackle ; to the long one of the foremast, the fore tackle ; overhaul their lower blocks into the boat and hook them to the slings.

Reeve the falls through leading blocks on the opposite side of the deck.

IN A SHIP WITH A MAIN DECK,

Lead the forestay fall through a leading block from the break of the forecastle, on the larboard side, into the waist. The mainstay from the break of the quarter-deck, on the same side, into the waist. Lead the mainstay fall forward; fore, aft.

MAIN TACKLES,

Through leading blocks from the break of the quarter-deck, on the starboard side, aft.

MAIN YARD TACKLE FALL,

Into the waist, through a leading block, from the break of the quarter-deck, forward on the starboard side.

RUNNER TACKLE FALL,

Through a leading block, from the break of the quarter-deck on the larboard side, aft.

FORE YARD TACKLE FALL,

Through a leading block, from the break of the forecastle, on the starboard side, into the waist, aft.

**FORE RUNNER TACKLE FALL,**

Through a leading block, from the break of the forecastle, on the larboard side, along the gangway.

Man the falls, have four men in the launch, to bear well off. Haul well taut the tackles on the yards, hauling through the slack of the stays, and walk the boat steadily up. When the boat is high enough to clear the hammock nettings, take a turn, for lowering, round a caval. Man the stays and walk the boat in, easing the yards as the men walk away with the stays. When over her place on the booms, take a turn, for lowering, with the stays and tackles; lower steady into her berth, and pass the lashings.\*

Send down the runners and tackles, stop them up, and stow them in a dry place.

How will you stop them up?

Overhaul the falls to the length required for hooking when in their place on the yard, and bight the end up between the two blocks, also the pendant, and stop every two feet with tyers (made as sinnet) for the purpose. These should be in charge of the forecastle men, and gunners, as nothing looks more slovenly than seeing tackles stopped up with yarns.

\* I have seen launches hoisted in without the yard tackles being used, but they were light boats.

What is the use of overhauling the falls to the length mentioned?

They will be more readily got up.

In flush vessels, the falls of the stays and yards, are led to the opposite side of the deck. Fore and main tackles and runners being hardly necessary for their boats.

#### BARGES AND PINNACES

Are hoisted in with the yard tackles and stays, yards being secured as before.

The burtons and lift are often frapped all together. I prefer their not being done so; but it is merely a matter of opinion. I have always thought there is a better chance of all rendering and bearing an equal strain. When the boats are in, off burtons, trice up or lower the yard tackles, and square yards, lower and stop the stays, and stow them away.

How are the stays and tackles lowered?

With whips, as got up.

What is the advantage of leading one fall forward and the other aft?

As the men can walk round by manning their opposite falls, which will prevent loss of time by laying forward or aft to re-man them.

As the men on the after fall have only to turn round when close to the leading block of the

fore one, and clap on it; those on the fore, doing the same when near the leading block of the main.

#### SHIFTING OVER FROM THE HULK.

Three or four days previous to leaving the hulk, one man from each mess should be allowed to arrange their mess berths, shift over their mess traps, &c. The hammocks berthed, all the arms, sponges, worms, &c., put in their places, and guns secured.

Before the men sleep on board the ship, they should mess there, to air the deck; and two days before going out of harbour, sling clean hammocks, and stow them in the ship's nettings, scrubbing the dirty ones in the hulk.

Shifting over is generally put off to the last minute, when the orders are generally given to "pipe over," and the confusion, noise, and quarrelling, particularly in a large ship's company, which always takes place, should induce those who have seen it done, to alter the custom.

If the mess traps are taken over by one man, the things all placed, and the people to mess in the ship before shifting, and the hammocks stowed in the nettings, the morning they are to do so, it will prevent all confusion; as the men can be mustered over in their watches, and their

stations read to them ; so they will not be at a loss to know their respective duties, on the ship's leaving the hulk to go out of harbour.

#### HAMMOCK GIRT LINES.

Whips are rove at the yard arms. If rope is not used on purpose for girtlines, the studding sail halliards will answer.

How will you reeve them ?

A tail block is clapped on each side of the jib boom end, another on the spanker boom. Each end of the girtline is rove through them. Overhaul down the whips, and bend them round the girtlines with a bowline knot, allowing room for their rendering through. Belay the foremost ends of the girtlines and trice up ; haul upon the after, and get all taut. A man lays out on each yard arm, and marks the girtline with rope-yarns where the triceing line, or whip, should be bent, then lower away ; cast off the bowline knot, and bend the triceing lines round the girtlines with a rolling hitch.

How do the whips lead from the lower yards ?

To the lower caps, through blocks hooked to the bolts and on deck. The lower end of the triceing line is often bent to the girtline, as an inhaul or downhaul. It is better to have them separate, as it prevents walking the hammocks up, and laying

fore one, and clap on it; those on the fore, doing the same when near the leading block of the main.

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How do the whips lead from the lower yards ?

To the lower caps, through blocks hooked to the bolts and on deck. The lower end of the triceing line is often bent to the girtline, as an inhaul or downhaul. It is better to have them separate, as it prevents walking the hammocks up, and laying

and running lines, and spliced into the jackstay. In either case they must be hauled up and down together, and the clothes bent on when all of a lump, which causes delay, and dirties them much by laying on the deck; and should it be required to dry a boat's crew's or a few men's things, unless a studding-sail tack, or some single rope is used, the whole number of lines have to be got up.

They are better fitted separately, as follows :—

Have bull's-eyes made, or thimbles, and splice a tail round each, large enough to take a round turn round a shroud, and half-hitch. Have lines of sufficient length to reeve through each, and when the clothes are to be put on, fill the upper line first, and hoist it up; then fill the second and so on. In getting down, commence with the lower one. These will be found to save much time and confusion. Neat nettle stops should be used for stopping clothes on.

#### PREPARING TO LEAVE THE HULK, AND GO OUT OF HARBOUR.

See the tiller ropes all clear. Cross topgallant yards, bend the gear, take the covers off the jibs, spanker, and staysails, and coil every rope down, clear for running; have the ends of hawsers pointed up each hatchway, ready for handing out if wanted; a range of both cables on deck, buoy ropes clear, and anchors ready for letting.

go. Breast ropes and leads in the chains, and if any boats are to be towed, good ropes, and boatkeepers in them.

How are the breast ropes fitted ?

They are made as sword mats, tapered at each end, and secured to two shrouds, with seizings passed round them, and through the eyes in each. They are for the men to lean against when heaving the lead.

#### LEAD LINES.

One end is bent to the lead, the other hitched to a laniard.

How is it bent to the lead ?

A hole is made in the upper end of the lead, a piece of rope rove through it, and both ends spliced together ; an eye is spliced in, the end of the line put through this strap, and the lead shoved through the bight, and hauled taut.

How is the line marked ?

Black leather at 2 fathoms, with a hole in it ; ditto, 3 ; white, 5 ; red, 7 ; black leather, 10 ; blue, 13 ; white, 15 ; red, 17 ; two knots at 20.

#### DEEP SEA LEAD

Is marked the same as far as twenty fathoms ; one knot at twenty-five fathoms, three at thirty, and so on. That at twenty-five is called the half-knot, they are kept on reels for the purpose.

## LOG LINES

Are also kept on reels. The stray line is marked with a piece of bunting. The next mark is called a half-knot. The distance between each mark being forty-eight feet.

The length of the stray line is regulated by the size of the ship.

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Having completed the fitting of rigging, and preparing a ship for sea, I shall, for the present, conclude; and if I find that it fulfils my intentions, by being the means of giving information to any of the junior branches in the service, for whom it has been expressly written, I shall consider myself fully rewarded for any trouble I have taken.

THE END.

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